

Sustainable Environmental Awareness in the Making of Steinway & Sons Pianos and Opinions of Lecturers on Sustainable Environmental Literacy in Piano Making

Sezer Dinçer*

Ministry of National Education (MEB), Turkey

Corresponding author: Sezer Dinçer, E-mail: ssezerdincer@gmail.com

ARTICLE INFO

Article history

Received: February 21, 2023

Accepted: March 21, 2023

Published: April 30, 2023

Volume: 11 Issue: 2

Conflicts of interest: None

Funding: None

ABSTRACT

The majority of the pieces that make up the structures of the piano are wooden products. Large piano brands provide resources for the materials. They use various forest products or they create their own forests. Respecting life, biodiversity together with protecting nature and our world are important elements for sustainable environmental awareness. The sustainable environmental awareness is developing by ensuring that current needs are met and transferred to future generations with controlled consumption without destroying natural resources. In this study, it was aimed to examine the knowledge levels of the piano educators regarding the sustainable environmental studies of the piano producer Steinway & Sons brand, and also the production of the Steinway & Sons brand with sustainable environmental awareness. The research is limited to the Steinway & Sons brand. The lecturers in Turkey constitute the scope of the study and the ones who are conveniently reached make up the participants of the study. Qualitative research methods are used in the study. The data are obtained by document review method, content analysis and questionnaire. The results showed that; majority of the lecturers do not have any knowledge about the dimensions of sustainability in piano production, such as energy use, material use, recycling and responsible forestry.

Key words: Steinway&Sons, Sustainable Environment Awareness, Piano Making, Sustainable Environmental literacy

INTRODUCTION

Respecting life, biodiversity together with protecting nature and our world are important elements for sustainable environmental awareness. Thanks to these elements and the policies implemented, a more sustainable life can be achieved by minimizing consumption and protecting our environment.

Sustainability introduces a concept that requires a change in the way of thinking without reducing the quality of life. The essence of this change is to aim at solutions for environmental management, social responsibilities and economy, which are in solidarity from a universal perspective, and not for becoming a consumption society (Özmehmet, 2008).

The concept of sustainability is evaluated at different levels based on the subjects it is applied to. For example, the concept of sustainability in production is the minimum damage to the environment while maintaining production (Yavuz, 2010, p. 64).

Sustainability

According to the definition made by the Organization for Economic Cooperation and Development (OECD), sustainable development is the realization of the needs of today's generations without compromising on the needs of future

generations (OECD, 2001). Sustainable elements attract attention in the fields of industry, tourism, economy, agriculture, urbanization, and pollution.

The UN Conference on the Protection and Development of the Environment was held in Stockholm in June 1972 with the participation of 113 countries. This international conference has been a turning point in terms of the global dimension and scope of the environmental and ecological problems and it has affected the environmental policies of many countries with the development of principles that emphasize the connection of the economic and social development with the environment (Özmehmet, 2008).

The phrase "sustainable development" was first defined formally by Gro Harlem Brundtland in the "Our Common Future" report prepared for the World Commission on Environment and Development in 1987 (Özmehmet, 2008).

The increase in the production activities in the recent years, combined with the insensitive consumption of natural resources, leads to an increase in environmental pollution. This situation naturally increases concerns about the future of the world although a certain level of awareness is created. The concept of "sustainable production" is a result of this awareness. Sustainable production means that enterprises carry out their current production activities with less damage

to the environment in order not to jeopardize their future production. Sustainability has become an important responsibility for both businesses and society.

For example, Google, one of the world-famous brands, is one of the first companies of its size to provide 100% of its annual electricity consumption with renewable energy. Google, which carries out many projects and collaborations on the sustainable environment, has also designed Google products to detect living species in many parts of the world without disturbing natural life (Google, 2022).

Objective and Research Questions

The current study examines the knowledge levels of the piano educators regarding the sustainable environmental studies of the piano producer Steinway & Sons brand in addition to the production of the Steinway & Sons brand with sustainable environmental awareness. To address these objectives the following research questions were posed:

1. What is the status of sustainable environmental awareness of Steinway & Sons brand in piano making?
2. What are the lecturers' views on sustainable environmental awareness in the construction of Steinway&Sons pianos?

LITERATURE REVIEW

Sustainable Environmental Literacy

The World Wildlife Fund's (WWF) 2006 Living Planet Report states that we are rapidly depleting and destroying our natural resources every day. There is a need to question the attitudes of individuals towards the environment in preventing environmental problems and protecting the environment. Thus, environmental problems can be identified and measures can be taken for dangerous situations (Bilim, 2013).

It is known that environmental problems are directly or indirectly caused by the products produced by industries, consumer products and the behavior of consumers. In order to protect and prevent the deterioration of the environment from an early age, it is necessary to develop attitudes and values, participation and skills of individuals, in other words, environmental education should be given (Bilim, 2013).

Environmental education has goals in the cognitive and affective field. While cognitive goals try to make individuals environment literate, goals in the affective field create values and attitudes towards the environment and environmental problems (Erdoğan, 2007). After the International Environmental Education Program (IEEP) was established in 1975 in cooperation with UNESCO and the United Nations Environment Program (UNEP), the Intergovernmental Conference on Environmental Education (ICEED) was held in Tbilisi in 1977, the first in the world.

At the global level, environmental education has gained its structural and objective character within the IEEP with the Tbilisi Conference. When the researches on environmental education are examined, the Tbilisi Conference and the declaration published at the end of the conference have been a turning point for the studies carried out to improve

environmental education. These documents state the nature, objectives and pedagogical principles of environmental education at the national and international levels, as well as its broad framework.

Structures That Make Up the Piano

Basically, the structures that make up the piano are made of wood, metal, and felt, called baize. The sound board of the piano is the most important structure that makes up the piano. It is located at the back of it. The wooden case, which is the rib bone of the piano and is usually made of resinous sugar pine, provides support to the sound board.

The piano consists of a wooden case surrounding the sound board and the chassis holding the wires. It has 88 keys, 52 white and 36 black keys. Approximately one key weighs between 50 and 55 grams. The keys are made of spruce and linden and the keyboard bed is made of spruce.

Tuning nails are usually made of steel and nickel plated against rust. The number of wires varies between 218 and 226. The wires are steel. They are divided in groups of three except for the bass wires and consist of various thicknesses, wrapped with pure copper in the bass section (Dinçer, 2022).

Steinway & Sons

There are many brands in the world of piano production. One of the preferred brands among many pianists, institutions and organizations is Steinway& Sons. Heinrich E. Steinweg made his first stringed instruments at the age of 20. In 1825, he set up his own workshop in Seesen. In 1836, he secretly produced his first grand piano in the kitchen of his house. Steinweg partnered with Friedrich Grotrian, a piano salesman from 1856 to 1865, and continued to make Steinweg brand pianos. Heinrich E. Steinweg founded Steinway & Sons in 1853. Since Heinrich E. Steinweg produced 482 pianos in Germany, the first piano made by Steinway & Sons was given the number 483. Steinway was granted 139 patents, the first of which was in 1857. It has gained the title of a company with the most patents.

In the 1860s, Steinway increased its production from yearly 500 pianos to about 1,800 pianos with a workforce of 350 people. The employees of this factory were German immigrants and the official language of the company was German. In 1865, the Steinway family sent a letter to one of their sons, C.F. Theodor Steinweg, asking him to leave the German factory due to the death of their brothers Henry and Charles and to take over the leadership of the family company and go to New York.

In 1870-80, the company town "Steinway Village" was founded by William Stienway in the Astoria district of Queens, New York City. Steinway Village has its own foundry and sawmills along with houses for employees, a kindergarten, library, post office, voluntary fire department, parks and a new factory that is still in use today.

During World War II, the Steinway factory in Queens received orders from the Allied Armies to build wooden gliders to carry the troops behind the enemy lines. Steinway was able to make several regular pianos during that time,

measured for specific height requirements for each piano and are manually notched. The keys are made of Bavarian spruce tree. Although the surface of the white keys was previously made of ivory, in the 1950s Steinway stopped using ivory and started to make it from polymer.

The American piano industry switched to plastic by voluntarily abandoning the use of ivory as a keyboard material in the mid-1950s. By the 1980s, European producers followed the same procedure. Since then, the piano manufacturing industry has not involved in the illegal use or import of ivory; today, there is no new piano made with ivory (Phillips, 2015).

In 1962, the Queens Steinway factory introduced the Permafree movement with the use of Teflon pieces instead of fabric pieces for its grand pianos. Although Teflon was designed to withstand abrasion and moisture changes better than fabric, it caused some unforeseen problems especially during weather changes. Therefore, the production was discontinued in 1983. The Hamburg Steinway factory never used Teflon pieces in their pianos.

The hammer felts are made with the first-class Merino nails from Australia and Africa. Steinway officials, who say that they have made great improvements in the quality of wool in the last decade, stated that they use whole long wool instead of using a mixture of wool fibers of various lengths. This situation has created much more stable and consistent hammer felts after combing and pressing the wool by holding on to each other more easily (Steinway, 2022).

The wires in the middle and high-pitched parts of the pianos are made of steel and the bass strings are made of copper-wound steel. The strings are evenly spaced with one end wrapped around the tuning pins, which are placed in a laminated wooden block called the tuning nail block. The tuning pins (nails) hold the strings tight and are held in place by friction. Steinway also uses the front and rear scales, where the main vibrating section of the strings is amplified by a much smaller vibration at both ends fixed in place. In 1872, German physicist Hermann von Helmholtz developed front and rear aliquots (string connection sections) that allowed traditionally non-vibrating sections of strings to vibrate in harmony with the main string, and this innovation led Steinway to obtain a patent.

In Steinway's pianos, the chord nail block is made with seven layers of hard textured wood glued together and placed at an angle of 45° according to the direction of the wood's vein. It is designed to keep the piano tuned for longer. The artsy and commonly preferred brand for piano, Steinway & Sons, demonstrates its sensitivity in sustainability as in every stage of piano production.

Steinway & Sons conducts studies on energy use, forestry and recycling during the piano production phase. The New York Astoria Steinway factory has the world's largest solar-powered temperature control systems of its kind. Mounted above the factory roof, there are 38 300 kg solar panels that collect sunlight and focus the circulating liquid to heat it to 340 degrees Fahrenheit. The steam generating system at 200 degrees Celsius is pumped into a "high-performance 100-ton dual-acting absorption cooling group". This

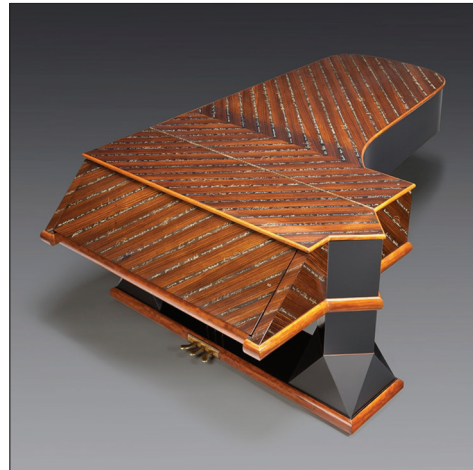


Figure 1. 500,000th Steinway&Sons piano

AQ1



Figure 2. 600,000th Steinway

AQ1

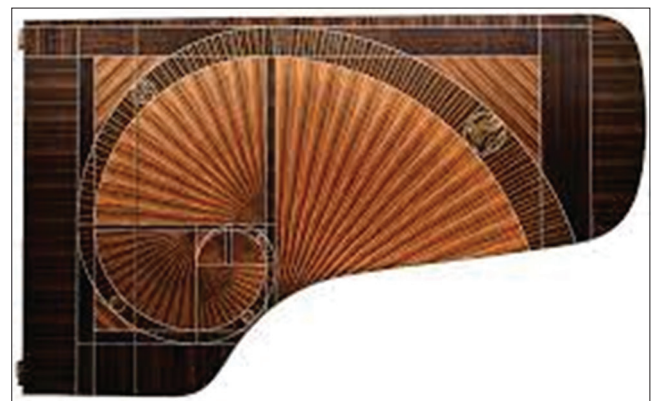


Figure 3. 600,000th Top view of Steinway&Sons piano

AQ1

cools the factory floor by dehumidifying it in the summer months, and pressurized steam heats the factory in the winter months (Steinway, 2022).

Precise humidity and temperature levels are required for the piano production process. This system indicates that a moisture balance is provided based on the season thanks to the cooled air. By working with energy consultants since 2006, Astoria factory has reduced its energy use by 35% (Steinway, 2022).

Efforts to reduce the energy consumption of the factory continue with their choice of LEDs instead of lighting fixtures.

Moreover, they provide hot and cold insulation of the factory building facade with energy-saving glass for protection against harmful UV rays and sudden changes in humidity.

Since 2009, Steinway has installed a closed-loop dust collection system, climate-controlled spray booths and a solar-cooled water system. All of this process allows re-incineration, boiler controls, insulation of the factory and re-processing of scrap into usable parts.

Steinway& Sons enables wood chips to be renewed and transformed into alternative energy sources by processing the chips formed in the production phase and turning them into wood pallets and bio-bricks (Steinway, 2022).

Steinway & Sons is also a member of the “Hardwood Forestry Fund” and has been working with this fund, which has planted more than 500,000 hardwood trees since its establishment in order to promote the growth, management, education and environment-friendly use of our forest resources (Steinway, 2022).

Steinway & Sons supplies birch, hard maple and yellow poplar trees from FSC (Forest Stewardship Council) certified timber suppliers. It harvests trees when they reach the age of 80-100+ with the awareness of responsible forestry (Steinway, 2022).

In addition, according to the IUCN Red List database, sitka spruce is in the category of “Least Concern” (IUCN, 2013). Spruce type used in making sound board of Steinway&Sons pianos; the aforementioned Sitka spruce is supplied from Alaska.

The Lecturers’ Views on Sustainable Environmental Awareness in the Construction of Steinway&Sons Pianos

The opinions of the lecturers were obtained through the applied questionnaire. The questionnaire consists of two parts. In the first part, the questions for obtaining personal information are given, and in the second part, the questions about sustainable environmental awareness in the production of Steinway & Sons pianos are included.

Participant profile

The lecturers who participated in the research are listed in Table 1. A total of 14 lecturers from the universities in various regions of Turkey participated in the research.

As shown in Table 2, 4 of the lecturers participating in the research were in the 1st-4th grades of their professional life. Three are serving for 5-9 years. Three of them are working in their 10-15th service year, 2 in the 17th and 3 above the 27th year. While three of the lecturers are more experienced in the profession, four of them are still in the first years of their professional life.

Findings on Sustainable Environmental Awareness in the Making of Steinway&Sons Pianos

In this section, findings on sustainable environmental awareness in the construction of Steinway & Sons pianos are included (Table 3).

According to the results of the questionnaire, most of the lecturers use Yamaha pianos in their lessons. Kawai, Hofmann, Belarus and Spindler brands are also among those used in piano training.

The lecturers were asked, ‘Do you think that the pianos you take to the lesson will affect the brand’s trials?’ As shown in Table 4, 13 of the instructors answered yes to this

Table 1. Institutions where faculty members work

University Name	Lecturer <i>f</i>
Afyon Kocatepe University State Conservatory	1
Ankara Hacı Bayram Veli University Turkish Music Conservatory	1
Ağrı İbrahim Çeçen University Faculty of Education Department of Music Education	2
Bolu Abant İzzet Baysal University Faculty of Education Department of Music Education	3
Ankara Gazi University Faculty of Education Department of Music Education	2
Çorum Hitit University Faculty of Fine Arts Music Department	2
Kırıkkale University Faculty of Fine Arts Music Department	2
Çanakkale 18 Mart University State Conservatory	1
Total	14

Table 2. Academic year of service

Academic Year of Service	Lecturer <i>f</i>
1-4	4
5-9	3
10-15	2
17	2
27+	3
Total	14

Table 3. Brands of pianos used by lecturers

Brands of pianos used by lecturers	<i>f</i>
Yamaha	6
Kawai	5
Hofmann	1
Belarus	1
Spindler, Bonn (1923)	1
Total	14

Table 4. Do you think the brand of the pianos you teach will affect your lesson?

Do you think the brand of the piano you teach will affect your lesson?	<i>f</i>
Yes	13
No	1
Total	14

question and stated that the piano brands they teach will affect the lesson.

The lecturers were also asked, 'Do you think the brand of the piano you teach will affect your lesson?' As Table 5 shows, 13 lecturers answered 'yes' to this question.

Do you know about sensitive production in piano production, which are the dimensions of sustainability, such as energy use, material use, recycling and responsible forestry? While 3 lecturers answered "yes" to the question, 11 lecturers answered "no" (Table 6).

The next question was, "Do you know about the sensitive production of Steinway & Sons pianos on the dimensions of sustainability, such as energy use, material use, recycling and responsible forestry?" While 3 lecturers answered "yes" to the question, 10 lecturers answered "no" (Table 7).

As shown in Table 8, all of the lecturers answered 'yes' to the question, "Do you think brands should have sustainable environmental awareness in Instrument/Piano Making?".

Table 9 shows the results of the question, "Does the quality of the brand you use in your piano education process affect your lesson?" While 13 of the lecturers answered "yes" to the question, 1 lecturer answered "no".

The results of the question "Do you think that the brand you will use in the piano education process is Steinway & Sons, will change the quality of your lesson?" in Table 10

Table 5. Do you use steinway & sons pianos in your piano education process?

Do you use Steinway & Sons pianos in your piano education process?	<i>f</i>
Yes	1
No	13
Total	14

Table 6. Do you know about sensitive production in piano production as regards to the topics of energy use, material use, recycling and responsible forestry which are the dimensions of sustainability?

Do you know about sensitive production in piano production, which are the dimensions of sustainability, such as energy use, material use, recycling and responsible forestry?	<i>f</i>
Yes	3
No	11
Total	14

Table 7. Information on the precise production of steinway & sons pianos in sustainability dimensions such as energy use, material use, recycling and responsible forestry

Do you know about the sensitive production of Steinway & Sons pianos on the dimensions of sustainability, such as energy use, material use, recycling and responsible forestry?	<i>f</i>
Yes	3
No	11
Total	14

indicate that 11 lecturers answered 'yes' to the question; they think that the Steinway&Sons pianos will change the quality of the lesson and 3 lecturers think that the use of Steinway& Sons piano during the piano education process will not change the quality of the lesson.

The Lecturers' Opinions

Finally, the lecturers participating in the study were asked about their views on sustainable environmental awareness and its effect on piano education in the construction of Steinway&Sons pianos. 11 lecturers shared their opinions on this subject.

All the participants answered questions in Turkish and all of the opinions are translated by the author for this study.

These are as follows:

Some lecturers have reported that the high quality of Steinway & Sons pianos will positively affect the efficiency of the course. For example, Ayşegül Göklen:

I think that a good piano will affect the efficiency and playing quality of the lesson in terms of the sound and touch feeling. I think that Steinway & Sons Pianos will have a positive impact on the teaching of the course, as they are of high quality. I also appreciate that they produce pianos with an important criterion such as sustainable environmental awareness, and I would like to encourage my students to buy pianos of this brand if they are financially available.

Table 8. Conclusions on the need for brands to have sustainable environmental awareness in instrument/piano production

Do you think brands should have sustainable environmental awareness in Instrument/Piano Making?	<i>f</i>
Yes	14
No	0
Total	14

Table 9. Quality of the brand you use in your piano education process affects your course

Does the quality of the brand you use in your piano education process affect your lesson?	<i>f</i>
Yes	13
No	1
Total	14

Table 10. Conclusions on the use of the steinway & sons brand in your piano training process

Do you think that the use of Steinway & Sons brand in your piano education process change the quality of your lesson?	<i>f</i>
Yes	11
No	3
Total	14

The lecturer from Afyon Kocatepe University State Conservatory has no knowledge of environmental awareness, but said that he likes Steinway&Sons pianos as follows:

I have not heard about their environmental awareness and sustainability, but I am satisfied with the pianos of this brand and I think that using it during education is very beneficial for the student, both technically and musically.

A faculty member from Ankara Hacı Bayram University State Conservatory said:

I think that working with a good brand of instrument will increase the efficiency of the lesson. I think that the technical features of good brands like Steinway have a positive effect on acquiring technical skills to the performer.

Ceren Uygun Oğhan, another lecturer who was not informed about environmental literacy and sustainable environmental awareness and piano making, said:

In particular, I think that the weight of the keys is a factor that affects the piano lesson process. I have no idea about the sustainable dimensions in the construction of pianos.

The lecturer from Gazi University said:

I don't know much about the sustainable environmental awareness policy of Steinway pianos, but I think it is a brand that will positively affect piano education with its key sensitivity, depth and key weight. Of course, only the brand is not enough, regular piano maintenance is also a very important factor in the piano education process.

Apart from these, there are also lecturers who are knowledgeable about the production of Steinway&Sons pianos with a sustainable environmental awareness. He said that lecturers and students should be informed about brands that produce pianos with sustainable environmental awareness as follows:

As an educator who has watched all the documentaries prepared on this subject, I firmly believe that especially students should be made aware of sustainable environmental awareness. At the same time, I think that the lecturers in this field should be informed and that panels and seminars should be organized on their contributions to piano education.

Lecturer from Bolu Abant İzzet Baysal University Doç. Dr. Ekin Çoraklı Kahraman said:

A very good attitude. Recycling means less harm to nature. Talking about this situation to students will contribute to their perspective. I also hope that this situation will contribute to production, and I wish more Steinway&Sons pianos to reach countries like our country where the number and quality of pianos are limited.

Lecturer from Gazi University Dr. İtir Eskiöğlü Kamceç said:

This company, which aims to be the 'best' in piano production, is famous for not compromising on quality standards. I read that they have a considerable conical section solar power project in the world (I think it's called parabolic). This refers to the environment, the use of energy. Again, I know that they have initiatives in the

collection and reuse of wood dust (from the production of piano furniture) with environmentalist approaches, they buy the lands near the trees they use in production and plant them.

Lecturer from Kırıkkale University Dr. Görkem Kumtepe said:

As in every field, I think that every step taken with sustainable environmental awareness in the field of music is a positive contribution to the world. Piano education should not be an educational process based only on playing the piano instrument. It should be included in the process from the formation of the piano to its history, from its founders to its players, to the technological innovations. In this context, it is quite normal that this brand, which has sustainable environmental awareness, is preferred as a lesson tool.

Another lecturer said that recycling and sustainability issues should be given importance and piano should be produced as follows:

I have no information, but the material quality of the instrument used, of course, also affects the quality of education. I believe that recycling and sustainability issues should be given importance so that the good materials used do not become unattainable in the future.

Another lecturer from Kırıkkale University expressed the following views on piano production with sustainable environmental awareness:

Of course, it is very important to plan an eco-friendly production process, but I do not think that it has any contribution to piano education.

Discussion

Solving environmental problems can be achieved primarily by educating individuals about the environment. Environmental education raises individuals' awareness of their beliefs and personal values in revealing and evaluating their thoughts about the environment (Keleş, 2007).

There are a limited number of studies on environmental education in higher education in Turkey (Berberoglu & Tosunoğlu, 1995).

In parallel with the global developments in environmental education, the Ministry of National Education (MoNE) and Higher Education Institution (YÖK) in Turkey brought the issue of environmental education to the agenda with the new program prepared in 2007. However, although environmental literacy is frequently included in the international literature, scientific research on environmental education in Turkey is still at the level of determining the attitudes of primary school students (Alp et al., 2006).

There are many brands in piano making. Although these brands are a budget determining factor when selected by the player, the preference of brands that use good and conscious materials in their production remains secondary. If instructors are knowledgeable and equipped about brands that produce piano with sustainable environmental awareness, they can raise awareness of music teacher candidates or music department students. In this context, it is thought that by raising awareness of educators about the production

of piano-producing brands with sustainable consciousness, individuals who respect our planet and are aware of protecting our world and nature will be raised.

With the outputs of this study, it is thought that the instructors will also gain awareness about the positive effects of the students on their environmental literacy levels and the choice of brands produced with a sustainable awareness in piano preferences. For this reason, in the study, data on the sustainable environmental activities of Steinway&Sons pianos, which carry out conscious and responsible production in piano production, and the sustainable environmental literacy of instructors in piano production were obtained.

CONCLUSION

The study shows that the Steinway & Sons brand produces its pianos with important measures taken in terms of energy use, material use, recycling and responsible forestry, which are the dimensions of sustainability. Steinway & Sons has made an important step by not using ivory in key making within the framework of the prohibition of the use of ivory, which has been valuable since ancient times and has led to the extinction of elephants from 1950 to the present day. It has shown its sensitivity in sustainability issues by saving energy use with the solar energy systems it uses in its factory among other measures it has taken.

Steinway & Sons has put forward a reliable and sustainable production vision for its employees and consumers with energy savings by preserving natural resources, without polluting nature, with its handmade pianos designed to last for a long time and to be passed down from generation to generation, not for a single concert. With this vision, it has become the most preferred brand by producing quality pianos that will last for a long time. The survey answered by 17 lecturers indicates that educators do not use Steinway& Sons brand pianos in the education process.

The lecturers think that the brand of the piano they use will affect their lessons. Majority of the participants do not have any knowledge about energy use, material use, recycling and responsible forestry, which are the dimensions of sustainability in piano production. At the same time, they are not aware of the sensitive production of Steinway pianos in terms of energy use, material use, recycling and responsible forestry, which are the dimensions of sustainability.

Lecturers believe that brands should have sustainable environmental awareness in the production of instruments and pianos. They also think that the use of Steinway pianos in the piano education process will positively affect the quality of the course. One of the lecturers thought that students and teachers should be made aware of sustainable environmental awareness and panels and seminars can be organized on this subject.

During the piano training process, not only the subject of playing the piano, but also information about the history, technological developments and production of the piano should be included. Seminars and trainings should be organized on energy use, material use, recycling and responsible forestry in the production of piano for lecturers and those interested in piano, and awareness should be raised about

the preference of brands based on whether they present less sensitivity to the nature.

END NOTE

1. <https://www.steinway.com/news/press-releases/steinway-sons-marks-a-historic-milestone-with-the-unveiling-of-the-companys-60000th-piano>

REFERENCES

- Alp, E., Ertepinar, H., Tekkaya, C., & Yilmaz, A. (2006). A statistical analysis of children's environmental knowledge and attitudes in Turkey. *International Research in Geographical and Environmental Education*, 15, 210-223. <https://doi.org/10.2167/irgee193.0>
- Barron, J. (2007). *Piano: The Making of a Steinway Concert Grand*. Macmillan.
- Berberoglu, G. & Tosunoglu, C. (1995). Exploratory and confirmatory factor analyses of an environmental attitude scale (EAS) for Turkish university students. *The Journal of Environmental Education*, 26, 40-44. <https://doi.org/10.1080/00958964.1995.9941444>
- Bilim, İ. (2013). *Sürdürülebilir Çevre Açısından Eğitim Fakültesi Öğrencilerinin Çevre Okuryazarlık Düzeylerinin Belirlenmesi* [Master's thesis]. Afyon Kocatepe Üniversitesi.
- Cattani, G., Dunbar, R. L., & Shapira, Z. (2017). How commitment to craftsmanship leads to unique value: Steinway & Sons' differentiation strategy. *Strategy Science*, 2(1), 13-38. <https://doi.org/10.1287/stsc.2017.0024>
- Chapin, Miles (1997). *88 keys: The making of a Steinway piano*. Clarkson Potter Publishers.
- Diñçer, S. (2022). *Video destekli öğretim modeli ile yapılan piyano akordu ve bakımı eğitiminin öğrenmeye etkileri* [Doctoral dissertation]. Bolu Abant İzzet Baysal University.
- Erdoğan, G. (2007). *Çevre Eğitiminde Küresel Isınma Konusunun Öğrenilmesinde Proje Tabanlı Öğrenmenin Etkisi* [Unpublished master's thesis]. Zonguldak Karaelmas University.
- Karasar, N. (2006). *Bilimsel Araştırma Yöntemi*. Nobel.
- Keleş, Ö. (2007). *Sürdürülebilir Yaşama Yönelik Çevre Eğitimi Aracı Olarak Ekolojik Ayak İzinin Uygulanması ve Değerlendirilmesi* [Unpublished doctoral dissertation]. Gazi University.
- OECD (2001). *Strategies for sustainable development- Practical guidance for development*. Paris: OECD.
- Özmehmet, E. (2008). Dünyada ve Türkiye Sürdürülebilir Kalkınma Yaklaşımları. *Journal of Yaşar University*, 3(12), 1853-1876.
- Phillips, S. (2015). *New Federal and State Ivory Regulations and Pianos*.
- Yavuz, V. A. (2010). Sürdürülebilirlik kavramı ve işletmeler açısından sürdürülebilir üretim stratejileri/concept of sustainability and sustainable production strategies for business practices. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 7(14), 63-86.
- <https://sustainability.google>
<https://www.steinway.com>
<https://www.iucnredlist.org>

APPENDIX

Sustainable Environmental Awareness in the Making of Steinway & Sons Pianos and Opinions of Lecturers on Sustainable Environmental Literacy in Piano Making

This research was prepared by Sezer Dinçer in order to collect data for the research “Sustainable Environmental Awareness in the Making of Steinway&Sons Pianos and Opinions of Lecturers on Sustainable Environmental Literacy in Piano Making”.

The aim of the research is to reveal the opinions of the instructors regarding the sustainable environmental awareness in the making of Steinway&Sons pianos used in piano education. In this context, you are expected to fill out a questionnaire consisting of two parts. The first part includes questions about personal information. In the second part of the questionnaire, there are questions about Steinway&Sons pianos.

Although the data obtained from the participant may be stored and used in other researches in the future, the data of the participants may be used for educational purposes, provided that their identity information is kept confidential.

Thank you for your time and contribution to my research. If you would like more information about the research, you can get in touch via the contact details below

Dr. Sezer Dinçer
+90 536 0321066
MEB
TÜRKİYE

Part 1

Personal Information

1. Name and Surname:
2. Place of Duty:
3. Years of Service:
 1-4 5-9 10-15 Other

Part 2

1. Which brand of piano do you use in your education process?
 Yamaha Kawai Steinway&Sons Other
2. Do you think the brand of the pianos you teach will affect your lesson?
 Yes No
3. Do you use Steinway & Sons pianos in your piano education process?
 Yes No
4. Do you know about sensitive production in piano production as regards to the topics of energy use, material use, recycling and responsible forestry which are the dimensions of sustainability?
 Yes No
5. Do you know about the sensitive production of Steinway & Sons pianos on the dimensions of sustainability, such as energy use, material use, recycling and responsible forestry?”
 Yes No
6. Do you think brands should have sustainable environmental awareness in Instrument/Piano Making?
 Yes No
7. Does the quality of the brand you use in your piano education process affect your lesson?
 Yes No
8. Do you think that the brand you will use in the piano education process is Steinway & Sons, will change the quality of your lesson?
 Yes No
9. What are your views on sustainable environmental awareness in the making of Steinway&Sons pianos and its effect on piano education?