Charles University in Prague

Faculty of Education

DIPLOMA THESIS

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Facilitating Experiential Learning Through Soundmapping in Music Education

Zážitkové Učení Prostřednictvím Zvukové Mapy v Hudební Výchově

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Study Program: Teacher Education of Musics for Lower and Upper Secondary Schools

Field of Study: Music Education

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DECLARATION

I hereby declare that this thesis entitled “Facilitating Experiential Learning Through Soundmapping in Music Education” represents an original research study executed, by me under the guidance and supervision of Mgr. Vartan Agopian, Ph.D. The thesis was done after registration for the degree of MEd at Charles University and has never been used in a thesis or dissertation submitted to this institution or any other for a degree, certificate, or other credentials.

In Prague, July 2024 …...…..……

Rodem Aktaş

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ABSTRACT

This thesis explores the application of Experiential Learning Theory (ELT) through soundmapping in music education. ELT involves a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. The study applies the ELT cycle by having students conduct soundwalks in urban and natural environments, transcribe environmental sounds into soundmaps, and use these transcriptions to create musical compositions. Conducted with middle school students in Prague, the research integrates soundmapping activities to enhance auditory awareness and foster creativity. The methodology includes soundwalks, group discussions, and composition performances, supported by a questionnaire capturing students' reflections. Findings suggest that soundmapping, when grounded in ELT, significantly enhances students' auditory awareness, creative thinking, and collaborative skills. This study highlights soundmapping as an innovative pedagogical tool in music education, promoting experiential learning and environmental engagement.

Keywords: soundmap, experiential learning theory, environmental inspiration, auditory awareness, auditory exploration, music creativity

ABSTRAKT

Tato diplomová práce se zabývá aplikací teorie zážitkového učení (ELT) prostřednictvím soundmappingu v hudební výchově. ELT zahrnuje cyklus konkrétní zkušenosti, reflektivního pozorování, abstraktní konceptualizace a aktivního experimentování. Studie aplikuje cyklus ELT tak, že studenti provádějí procházky v městském a přírodním prostředí, přepisují zvuky prostředí do zvukových map a používají tyto přepisy k vytváření hudebních skladeb. Tento výzkum, provedený ve spolupráci se studenty základní školy v Praze, integruje aktivity spojené s tvorbou zvukových map, které zvyšují sluchové povědomí a podporují kreativitu. Metodika zahrnuje zvukové procházky, skupinové diskuse a představení kompozic, zakončené dotazníkem zachycujícím reflexe studentů. Zjištění naznačují, že soundmapping, pokud je založen na ELT, významně zlepšuje sluchové povědomí žáků, jejich tvůrčí myšlení a schopnosti spolupráce. Tato studie vyzdvihuje soundmapping jako inovativní pedagogický nástroj v hudební výchově, který podporuje zážitkové učení a zapojení do prostředí.

Klíčová slova: soundmap, zážitkové učení, environmentální inspirace, sluchové uvědomění, sluchové zkoumání, hudební kreativita

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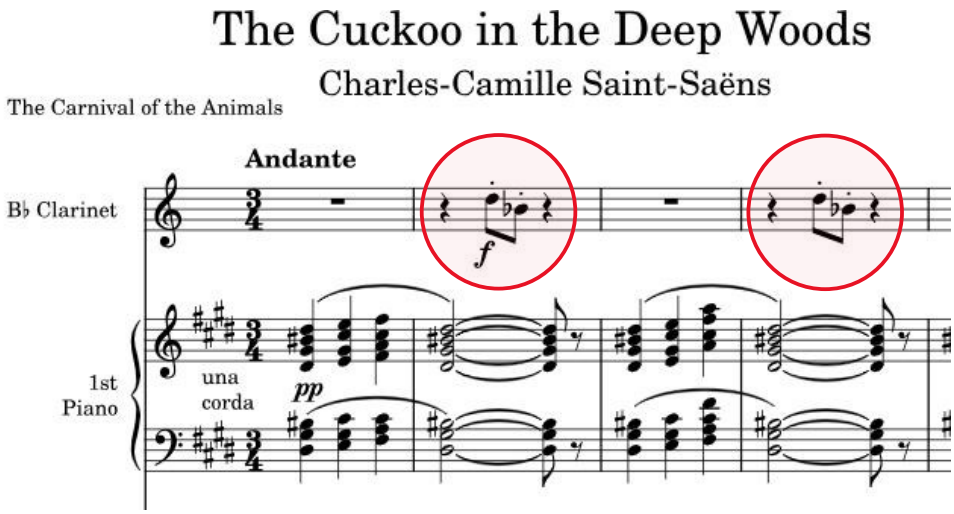
Chapter 1. Introduction

In the vibrant symphony of daily life, every sound holds the potential to inspire musical creativity. The endless potential of utilizing everyday sounds in music composition is evident in the works of great masters, including Antonio Vivaldi, Bedřich Smetana, Camille Saint Saëns, Ludwig van Beethoven, and so on. This thesis explores how engaging with everyday sounds through soundmapping can contribute to music education, making it more dynamic and experiential for students.

Great composers have masterfully woven everyday sounds into their music, creating vivid auditory landscapes. In Camille Saint-Saëns' "Carnival of the Animals (1886)," "The Cuckoo in the Depths of the Woods" features pianos playing large, soft chords while the clarinet performs a two-note ostinato, a major third interval, as can be seen in Figure 1, mimicking the call of a cuckoo bird. Bedřich Smetana's "Vltava" from "Má Vlast (1874-1879)" describes the river's course, starting from the two small springs, the Studená and Teplá Vltava, to the unification of both streams into a single current. Antonio Vivaldi's "The Four Seasons (1725)" captures the essence of spring, with violins replicating the chirping of birds and their calls for mates. In Beethoven's "Pastoral Symphony (1808)," the second movement uses strings to represent flowing water and a cadenza with woodwinds to imitate bird calls, namely the flute, oboe, and cuckoo depicting a nightingale, quail, and cuckoo. All these established examples illustrate how composers have effectively used everyday sounds to enhance their musical narratives.

Figure 1: Example of An Environment-Inspired Music



Source: *https://musescore.com/user/101036/scores/7350446?share=copy_link*

Building upon the principles of Experiential Learning Theory (ELT) by David Kolb, this study suggests an educational use of soundmapping that emphasizes the experiential benefits of such an activity. This method allows students to connect deeply with their environment, fostering both creative practices and auditory awareness. This approach encourages students to step outside the traditional classroom, listen attentively to their surroundings, and express those sounds in creative ways.

Due to the complexity of assigning a new theoretical basis – ELT – to a method – sound mapping –, several easing practices have been adopted. To be exact, the individual soundmapping activity will be followed by collaborative musical conceptualization and composition stages. The collaboration factor not only saves time but also improves engagement and the variety of creative

input. This way, experiential learning is practiced simultaneously by all students, benefiting each one from a variety of perspectives collected from group members.

ELT emphasizes learning through experience, based on a cycle of four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Specific to this study, students experience an innovative soundmapping activity adjusted to the previously mentioned stages of ELT. In this proposed methodology, soundwalks[1] Moreover, mindful listening– the initial steps of soundmapping – function as the concrete experience stage; then soundmapping corresponds to the reflective observation stage; after that, group discussions indicate a (collaborative) abstract conceptualization stage; and finally, group composition and performance in front of the rest of class serves as the active experimentation stage to complete the effective learning cycle of Kolb's ELT. Furthermore, this study conducts a summative questionnaire to complement the proposed methodology, further investigating the engagement of students and the students‘ reflection on their experiences with soundmapping, sound exploration, collaboration, and creative practice.

The selection of soundmapping as the central method for this thesis is rooted in its profound educational potential and alignment with contemporary pedagogical goals. Soundmapping, as an experiential learning activity, allows students to engage directly with their auditory environment, fostering both environmental awareness and creative musical thinking. This approach is particularly relevant given the increasing recognition of the importance of place-based education and the need for innovative methods that connect students more deeply and actively with their surroundings.

[1] Soundwalk, introduced by Murray Schafer, is the auditory receptive activity that connects location change with persistent listening, i.e. walking or moving while focusing on sounds.

Firstly, soundmapping offers a unique way to bridge the gap between environmental engagement and music education. The soundmapping method in this study requires students to listen attentively to their surroundings, identify and transcribe various sounds, and then creatively transform these sounds into musical compositions. Consequently, soundmapping facilitates a connection between auditory perception and creative output – i.e., music composition. This enhances students' listening skills and encourages them to think critically about the sounds they encounter daily. In doing so, it fosters a greater benefit from their environment and highlights the opportunities for natural as well as urban soundscapes.

Furthermore, soundmapping perfectly accommodates the principles of Experiential Learning Theory (ELT), which emphasizes learning through direct experience and reflective practice. ELT carries that knowledge is created through experience transformation, involving a cycle of experiencing, reflecting, conceptualizing, and experimenting. In this paper, soundmapping is established to embody this process by engaging students in the concrete experience of exploring their auditory environment, reflecting on the sounds they have encountered by visually transcribing them into a map, conceptualizing these collected sounds as components of musical compositions, and finally, experimenting with these components to create a cohesive piece of music. This iterative process not only deepens their understanding of sound and music but also develops critical thinking and problem-solving skills.

In the context of my research, focusing on 11-12-year-old students in Prague, soundmapping is particularly relevant due to its adaptability and accessibility in the age group. Younger students often benefit greatly from hands-on, interactive learning activities that allow them to explore and discover independently but collaboratively. In this research, soundmapping provides an age-appropriate way to introduce complex concepts such as soundscapes, ecomusicology, and the

creative use of environmental sounds in music education. Situating the activity within their familiar environment also ensures that learning is contextual and meaningful, which is a key factor in sustaining students' interest and motivation.

Moreover, soundmapping supports the development of a wide range of skills that are essential for holistic education. It enhances auditory recognition and spatial awareness and encourages collaboration and communication among peers, all while engaging with artistic creativity. These skills are not only valuable in the context of music education but are also transferable to other areas of learning and everyday life. For instance, the ability to listen critically and work collaboratively are crucial skills in many professional and social contexts.

Choosing soundmapping for my thesis also responds to the growing demand for innovative and interdisciplinary approaches in education. Traditional music education often focuses on the development of technical skills and theoretical knowledge. While these are important, there is a need to expand the scope of music education to include activities that stimulate creativity, collaboration, and environmental interactivity. Soundmapping, as established in this thesis, addresses all of these needs by providing a fresh perspective on how music can be taught and experienced while encouraging students to think outside the conventional boundaries of musical practice.

Lastly, the relevance of soundmapping is underscored by its potential to contribute to ongoing research and practice in the field of music education. By documenting and analyzing the implementation of soundmapping activities, my thesis provides valuable insights into the practicalities, benefits, and challenges of this approach in the pedagogical domain. This can inform future educational initiatives and inspire other educators to incorporate soundmapping and similar experiential activities into their teaching practice.

In conclusion, soundmapping updated with the principles of ELT is a highly relevant and effective method for my thesis due to its ability to engage students in active learning, foster environmental and auditory awareness, and contribute to the advancement of innovative educational practices. Through soundmapping, students are not only learning about music and sound but are also developing a deeper connection to their environment and enhancing their overall educational experience.

The methodology of this thesis has been successfully implemented in a real-life 90-minute music lesson. It was successful because students were able to create music compositions inspired by their soundmaps. They reported enjoying the collaborative process and improving their creative thinking in music. The real-life application of this method demonstrated its effectiveness in enhancing students' engagement, creative practices, and auditory awareness.

Chapter 2: Theoretical Background

The objective of this chapter is to provide a broader context for this research. First, the root fields of soundmapping, ecomusicology -as the most relevant one- are covered more in depth in the Establishing the Background: Ecomusicology section. Next, the prevalence of environmental sounds in music history is presented.

This research aims to explore how environmental sounds can be a means to inspire musical composition, engaging students with their acoustic surroundings through soundmapping activities. To provide a theoretical foundation, several related fields were considered, such as Acoustic Ecology or Soundscape Studies and Ecomusicology. Each of these fields offers unique insights into the interaction between sound, environment, and human experience. They also overlap with the same concepts, such as soundscape, soundwalk, and soundmap.

Acoustic Ecology, also known as Soundscape Studies, was established by R. Murray Schafer in the late 1960s and early 1970s at Simon Fraser University in Canada. Schafer's initiative, particularly through the World Soundscape Project (WSP), provided the groundwork for this discipline. This theory examines the relationships between living organisms and their acoustic environments, emphasizing the preservation of natural soundscapes and understanding their ecological roles. He conceptualized the terms soundscape and soundmap, which are relevant to this study. The field advocates for creating and preserving healthy acoustic environments, focusing on the environmental and ecological significance of soundscapes (Schafer, 1977; Truax, 1978).

Ecomusicology is a field that builds upon the principles of Acoustic Ecology and is a more recent interdisciplinary field that gained momentum in the late 20th and early 21st centuries—pioneered by scholars such as Aaron S. Allen and Mark Pedelty, ecomusicology bridges musicology, ecology, and environmental studies. It examines the intersections between music,

culture, and nature, focusing on how environmental sounds influence and are reflected in musical practices. Ecomusicology investigates how music can promote environmental awareness, the representation of nature in music, and the cultural contexts of these practices. It also considers the ethical implications of musical activities on the environment, including sustainable practices in the music industry (Allen & Dawe, 2016; Pedelty, 2012).

For this research, which focuses on using environmental sounds as a toolbox for composition inspiration, Ecomusicology offers the most suitable theoretical framework. This field emphasizes the cultural and interactive power of music within environmental contexts, aligning with the study's objective to foster a musically useful connection between students and their acoustic environment. This field provides a more comprehensive baseline from which to understand how natural sounds can inspire musical creativity through environmental engagement.

By choosing Ecomusicology, this research aligns with a theory that not only addresses the environmental and acoustic dimensions of sound but also incorporates the cultural and experiential aspects crucial for fostering musical inspiration. This framework allows for an exploration of how students interpret and transform environmental sounds into musical compositions, promoting a richer, more interactive learning experience. Ecomusicology emphasizes the cultural and experiential aspects of music within environmental contexts. This approach helps students recognize the potential of their surroundings as a source of musical ideas and encourages them to engage creatively with their environment.

Ecomusicology is an interdisciplinary field that explores the complex relationships between music, culture, and nature. It synthesizes principles from musicology, ecology, and environmental studies, examining how musical practices and environmental awareness intersect and influence one another. The origins of ecomusicology can be traced back to the late 20th century, evolving

from earlier studies in Acoustic Ecology, a field pioneered by R. Murray Schafer in the 1960s and 1970s. Schafer's work with acoustic ecology and soundscape studies emphasized the significance of soundscapes and their ecological roles and the importance of preserving them, laying the groundwork for future explorations into the environmental dimensions of sound and music (Schafer, 1977).

Initially, ecomusicology focused on understanding how natural sounds and ecological themes were represented in musical compositions and performances. This early phase of the field sought to identify and analyze the ways in which music could reflect and communicate environmental concerns, drawing attention to issues such as pollution, climate change, and conservation. The concept of soundscapes, central to Acoustic Ecology, was instrumental in shaping the early definition of ecomusicology, highlighting the importance of listening to and preserving natural acoustic environments (Allen & Dawe, 2016).

Over time, ecomusicology expanded its scope to incorporate a broader range of ecological and cultural contexts. Today, the field not only examines how music represents the changes in nature but also how it actively engages with and impacts the environment and environmental awareness. Contemporary ecomusicology explores diverse areas, such as the ethical implications of musical practices on the environment, sustainable music production, and the role of music in fostering ecological consciousness among audiences. It also investigates how different cultures perceive and interact with their acoustic environments, emphasizing the global and interdisciplinary nature of the field (Pedelty, 2012; Allen, 2011).

For clarity, a wide array of topics that Ecomusicology now covers follows:

> Environmental Awareness in Music: How musicians and composers incorporate environmental themes into their work to raise awareness about ecological issues.

Cultural Representations of Nature: The portrayal of natural elements and landscapes in various musical traditions and genres.

Soundscape Ecology: The study of natural and human-made sound environments and their influence on human and ecological health.

Sustainable Music Practices: Exploring ways to reduce the environmental impact of music production, performance, and distribution.

Community and Place-Based Music: How local communities use music to express and maintain their relationships with their natural surroundings.

The field encourages interdisciplinary collaboration, drawing insights from anthropology, ethnomusicology, environmental science, and cultural studies to provide a holistic understanding of the interplay between music and the environment. As ecomusicology continues to evolve, it remains committed to integrating ecological thinking into music studies, promoting sustainability, and fostering a deeper appreciation of the interconnectedness between human culture and the natural world (Titon, 2020).

2.1 Historical Development of Ecomusicology

Although it is not possible to identify one pioneer of the concept of ecomusicology, the foundation can be traced back to the influential work of R. Murray Schafer, a Canadian composer, and environmentalist, who launched the World Soundscape Project (WSP) at Simon Fraser University during the late 1960s and early 1970s. Schafer's book "The Tuning of the World" (1977) was pivotal in conceptualizing Acoustic Ecology, focusing on the significance of soundscapes and their roles in ecological contexts. His work underscored the importance of preserving natural acoustic environments and studying the effects of noise pollution on both human communities and

ecosystems (Schafer, 1977). During this period, the concept of *'soundmap'* emerged as a tool within Acoustic Ecology to visually represent and analyze the spatial representation of sounds in a chosen environment. Soundmaps became instrumental in documenting and understanding how different sounds interact within a given space, providing a foundational method for this research study and providing an interesting practice that attracted further studies such as ecomusicology.

Following Schafer's pioneering efforts, Barry Truax and Hildegard Westerkamp stand as key contributors to the advancement of the field. Truax expanded on Schafer's concepts, incorporating them into broader acoustic communication studies (Truax, 2011) and further developing the theoretical framework of Acoustic Ecology. Westerkamp, also a member of the WSP, made significant contributions through her work on soundscape composition and efforts to connect global researchers and practitioners through the World Forum for Acoustic Ecology (Westerkamp, 2002).

The concept of ecomusicology began to solidify in the 21st century, with notable contributions from scholars such as Aaron S. Allen and Mark Pedelty. Allen's writings, particularly his 2011 articles in the Journal of the American Musicological Society, referred to Charles Seeger's definition of the term, which favored "ecocriticism" instead of "ecology" (Allen, 2011). Additionally, Pedelty's research further broadened the scope of ecomusicology by investigating how various musical genres and practices reflected environmental status. His book "Ecomusicology: Rock, Folk, and the Environment" (2012) explores the ecological implications of popular music compositions and their role in environmental activism. Pedelty's work highlights how musicians use their platforms to raise ecological awareness and advocate for sustainability (Pedelty, 2012).

The formal recognition of ecomusicology as a distinct field was marked by the first major conference on the subject in 2012 (Titon, 2015). This conference showcased a diverse range of approaches and attracted scholars from various disciplines, including ethnomusicology, anthropology, and ecological science. This event was a significant milestone, establishing ecomusicology as a recognized area in academia.

Another influential publication, "Current Directions in Ecomusicology" (2016), edited by Allen and Kevin Dawe, has further shaped the field by providing an overview of its main themes and directions. This volume includes contributions from numerous scholars, highlighting the interdisciplinary nature of ecomusicology and its relevance to contemporary ecological and cultural issues (Allen & Dawe, 2016).

Ecomusicology continues to grow, expanding its focus to further include the cultural and ecological aspects of music. Nowadays, the field more commonly researches the connections between sustainability and music. A recent study by Jeff Todd Titon put forth a robust example of this by highlighting the environmental efforts of ecomusicology as a means to achieve a more harmonious relationship between humans and nature (Titon, 2020).

Although it seems like the popular focus is environmental concerns, the field encourages further interdisciplinary collaboration, integrating ecological perspectives into music studies and fostering a deeper understanding of the relationship between music, sound, and the environment in today's society. This is the reason why it is the most fitting framework for this research.

2.2 Music Inspired by Environment

Building on the idea that a composer is someone who "organizes his perception of the world" through his work (Nass, 1975, p. 431), this study highlights the deep connection between

environmental sounds and music composition. Throughout history, environmental stimuli have played a significant role in shaping and inspiring musical works. This influence can be traced back to some of the most influential works by classical composers, as well as more contemporary ones, all of whom have used their surroundings as a rich source of inspiration. The connection between nature and music has led to compositions that reflect the beauty, influence, and fragility of the natural world. This historical perspective underscores the importance of integrating environmental awareness into music education, providing students with opportunities to engage creatively with their surroundings.

One of the most famous examples of music inspired by the environment is Ludwig van Beethoven's "Pastoral Symphony" (Symphony No. 6). Composed in 1808, this symphony is an explicit homage to nature, depicting the unpretentious beauty of the countryside. Beethoven's connection to nature is well-documented in his letters, personal writings, and biographies (Hamburger, 1960; Lockwood, 2005; Schindler, 2020). Notable sources describe this aspect of his life in his letters, and it shows that in these letters, Beethoven often expressed his profound appreciation for nature, and he frequently sought solace and inspiration in natural surroundings. He is known to often take long walks in the woods, which profoundly influenced his music (Schindler, 2020). The "Pastoral Symphony" vividly captures the essence of rural life, with movements that clearly represent scenes such as a storm and the calm after the storm.

Another notable example is Bedřich Smetana's inspiration from his surroundings when creating music, as evident in his writings (Bartoš, 1955). Namely, "Vltava" (The Moldau) from his symphonic cycle "Má Vlast" (My Homeland), composed in 1874, poetically describes the journey of the Vltava River from its source in the Bohemian Forest, through the Czech countryside, to its

merging with the Elbe River. Smetana's use of musical motifs to depict the flowing river and surrounding landscape demonstrates his profound use of surrounding stimuli.

Camille Saint-Saëns's "Carnival of the Animals" is another masterpiece that showcases the influence of nature on music. Composed in 1886, this suite of fourteen movements illustrates various animals, each represented by different instruments and melodic themes. The "Aquarium" movement, for instance, uses shimmering glissandi on the piano to evoke the image of an underwater movement.

Stephen Walsh, in his book "Debussy: A Painter in Sound" (2018), explores how Debussy's ability to translate the subtleties of nature into sound exemplifies the broader tradition of composers drawing from their environmental surroundings to create evocative and enduring works. This connection between nature and music highlights how deeply environmental inspiration can shape and enhance the creative process, affirming that the nuances of the natural world have been a pivotal source of inspiration for classical music throughout history.

Having established that environment has been a remarkable source of musical inspiration is not enough to encourage students to make use of this phenomenon. Since music education is more focused on performance skills or knowledge improvement –i.e., learning an instrument or how to sing, music history and basic theory, etc.–there is a lack of opportunities provided to learners to activate their creativity. That is why it’s crucial to not only recognize the effective use of environmental engagement in musical thinking but also to integrate such opportunities for creative thinking into hands-on music educational practices. In other words, pupils are to be not only informed of the effective use of environment in music but also be given a chance to musically experiment with the environmental sounds themselves. This research explores this kind of

experiential practice by utilizing soundmapping to foster creative and critical thinking in collaborative music education.

Chapter 3: Literature Review

In this chapter, a literature review for ELT in music education and soundmapping in education is covered. They are the two core concepts upon which this research is built.

In developing the theoretical foundation for this research on the educational potential of soundmapping activities in music education, several related theories of educational psychology were considered. These include Constructivism by Jean Piaget, Social Learning Theory by Albert Bandura, Social Constructivism by Lev Vygotsky (1978), and Situated Learning by Jean Lave and Etienne Wenger. While each of these theories offers valuable insights into the learning process, Experiential Learning Theory (ELT) by David Kolb was ultimately chosen as the most appropriate framework for this study.

Constructivism, as articulated by Jean Piaget, emphasizes the active role of learners in constructing knowledge through interactions with their environment. This theory highlights the importance of understanding the developmental stages of pupils and cognitive processes in learning (Piaget, 1952). In fact, this theory later inspired Kolb's conceptualization of Experiential Learning. While constructivism emphasizes the importance of experience in learning, it focuses on the cognitive development of children, making it less comprehensive for this study because this study involves diverse learning processes independent of age differences.

Albert Bandura's Social Learning Theory suggests that learning occurs through modeling, observation, and imitation within a social context (Bandura, 1977). This theory underscores how social interactions influence learning behaviors. However, social learning theory is more centered on observational learning rather than direct, hands-on engagement with experiences, which is critical to this research. While this particularly might be useful in future research on soundscape

applications in education, the focus of this current study on active, personal engagement with soundmapping activities aligns more closely with ELT's principles.

Vygotsky's Social Constructivism highlights the importance of social interaction and cultural context in learning. Key concepts include the Zone of Proximal Development (ZPD) and the role of 'more knowledgeable others' in facilitating learning (Vygotsky, 1978). This theory is highly relevant for understanding collaborative learning and the social dimensions of soundmapping. However, while Social Constructivism provides a strong framework for analyzing social interactions and cultural influences, it is less focused on the individual experiential processes that are central to this research.

Situated Learning, developed by Jean Lave and Etienne Wenger, emphasizes the importance of learning, especially within authentic contexts and communities (Lave & Wenger, 1991). This theory underlines the social and contextual dimensions of learning, which are important for understanding how students engage with their environment. However, Situated Learning focuses on learning as a social practice within specific communities, whereas ELT provides a more holistic framework that includes individual experiential processes in addition to social interactions. This aspect of situated learning makes it another potential theoretical framework for further broader research on soundscapes as it relates to the local aspect, namely, digital soundmapping applications.

Experiential Learning Theory was chosen for this research because it offers an emphasis on the experience itself as the facilitator of knowledge (Kolb, 1984). This cyclical model is particularly suited to soundmapping in music education, where students engage directly with their environment, reflect on their auditory experiences, conceptualize their observations into musical ideas, and experiment with these ideas through composition and performance.

Furthermore, ELT is flexible in accommodating different learning styles and its applicability across various educational contexts. By acknowledging diverse learning preferences, ELT ensures that the study can capture the varied ways students engage with and benefit from experiential activities. This adaptability is crucial for the inclusive and dynamic educational environment of this research.

In conclusion, while theories like Constructivism, Social Learning Theory, Social Constructivism, and Situated Learning provide valuable insights, Experiential Learning Theory offers the most comprehensive and applicable framework for this study. ELT's focus on the transformation of experience through a learning cycle, its inclusion of reflection and active experimentation, and its flexibility in accommodating diverse learning styles make it the best choice for exploring the educational impacts of soundmapping activities in music education.

3.1 Experiential Learning Theory

Experiential Learning Theory (ELT), conceptualized by David Kolb, is a robust and evolving framework that formulates learning as a process where knowledge is obtained through experience (Kolb, 1984). Essentially, ELT suggests that learning is an interactive process of direct personal experiences. This theory emphasizes that learning occurs as individuals engage with their surroundings, reflect on these engagements, develop abstract concepts from their reflections, and then apply these concepts through active experimentation. According to Kolb, effective learning proceeds as a cycle, and learners can embark on this cycle at any of its stages. Once the four stages are completed in sequence, knowledge is obtained effectively.

ELT belongs to the field of educational psychology and has had significant implications across various educational systems worldwide after it was initially developed in the United States. It

explicitly aims to improve educational practices. Instrumentally, it advocates for more engaging, reflective, and practical learning methods, standing in contrast to traditional, lecture-based approaches. The theory has been utilized in a wide array of educational contexts, from elementary and secondary education to higher education and professional training. This educational approach identifies real-world application as crucial to learning, and it claims that the development of practical skills is enabled through immersive and hands-on learning experiences.

Kolb's theory of experiential learning builds upon the foundational ideas of several key scholars, including John Dewey, Kurt Lewin, and Jean Piaget. All of these scholars elaborated on the role of experience in the learning process. ELT synthesizes these philosophical and psychological perspectives to propose a model in which learning is a constant process of adapting to the world. This theory is especially relevant in disciplines that require critical thinking, adaptive response, and problem-solving, making it a valuable framework for fields such as business, healthcare, engineering, and education.

In educational practice, ELT allows diverse learning styles and preferences. To facilitate that, it acknowledges that individuals learn in different ways and at varying paces. By emphasizing the transformative potential of experience, ELT aims for deeper comprehension, better knowledge retention, and the ability to apply learning in practical, real-world contexts.

The framework has been evolving in various contexts: ELT has been used in global cross-disciplinary applications such as engineering, management education, and healthcare, all of which have further provided insights to improve experiential learning; it has adapted to digital technologies using virtual simulations, interactive software, and online collaborative tools making it more accessible and versatile to practice hands-on learning experiences; and finally, it has also contributed to the evolution of assessment fostering a shift towards more authentic and formative

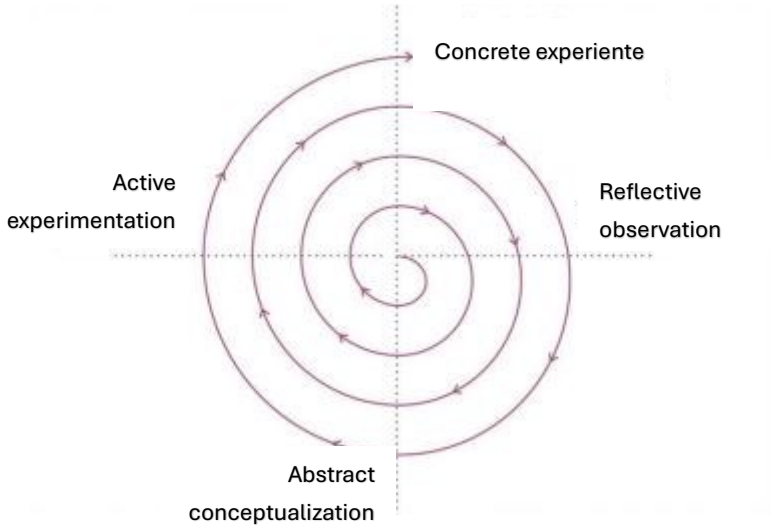
assessment methods rather than summative assessment, and this provides opportunities for a more individualized comprehensive evaluation. Particular to this research, this theory has been widely embraced and adopted in educational institutions around the globe, shaping teaching strategies, curriculum design, and educational policy to support more effective learning experiences.

As mentioned earlier, Kolb's Experiential Learning Theory is explicitly influenced by the works of the following scholars: John Dewey's emphasis on the continuity of experience and education laid the groundwork for experiential learning by highlighting the significance of reflection in the learning process (Dewey, 1938). Kurt Lewin's action research and laboratory training also influenced Kolb's model by underscoring the learning-effectivity of cycles of action and reflection (Lewin, 1946). Additionally, Jean Piaget's theories on cognitive development and the process of constructing knowledge through active engagement and adaptation provided a foundation for understanding how abstract conceptualization and active experimentation facilitate learning (Piaget, 1970).

Psychologically, Kolb's model is connected with the concept of learning styles, proposing that individuals have preferred ways of learning based on how they orient towards the model's four stages. The learning styles follow Diverging, Assimilating, Converging, and Accommodating. They reflect differences in experience engagement and processing (Kolb, 1984). Understanding these styles can help educators tailor their teaching strategies to better meet the needs of diverse learners.

Moreover, the four stages of learning established in ELT are *Concrete Experience, Reflective Observation, Abstract Conceptualization*, and *Active Experimentation*. They are established in a cyclical sequence for effective learning, as can be seen in Figure 2:

Figure 2: Kolb's Cycle of Experiential Learning



Source: Dočekal, V. (2012). Prožitkové, zážitkové, nebo zkušenostní učení?. *e-PEDAGOGIUM*, 9-17.

Concrete Experience (CE): The cycle begins with the learner actively engaging in a new experience. This stage emphasizes the importance of hands-on involvement and sensory engagement in the learning process. For instance, in music education, this can involve students participating in soundwalks to immerse themselves in the auditory data of their environment.

Reflective Observation (RO): Following the Concrete Experience, learners take a distanced point of view to reflect on the experience. This stage involves thoughtful consideration and observation of the experiences. Learners analyze what happened during the activity, looking at the experience from different perspectives. This reflection is crucial for developing insights and understanding the broader context of the experience (Kolb, 1984; Schön, 1983). In music education, students can reflect on the types of environmental sounds they heard, their sources, and the impact these sounds had on their perception of the environment by illustrating them on a paper, i.e., soundmapping.

Abstract Conceptualization (AC): In this stage, learners interpret the reflective observations and form abstract concepts and generalizations. This involves creating theories, models, or plans that explain the experiences and observations. It is a stage where learners make sense of the experience by integrating it into their existing knowledge framework (Kolb, 1984; Piaget, 1970). In music education, students can develop theories about the relationship between different types of environmental sounds and their emotional impacts, or they might conceptualize ways to integrate these sounds into musical compositions. These theories or conceptualizations would indicate the musical potential of every sound.

Active Experimentation (AE): The final stage involves using the abstract concepts in a practical context and testing the theories or models developed during the Abstract Conceptualization stage. Learners apply their new knowledge to the world around them, experimenting to see what works and what does not. This stage is about taking action and seeing the results, which then leads back to a new Concrete Experience. In the context of music education, students can compose and perform pieces using the environmental sounds they mapped and their musical conceptualizations of those sounds, thus completing the learning cycle and starting a new one (Kolb, 1984; Dewey, 1938).

In summary, Experiential Learning Theory offers a model of learning that emphasizes the critical and effective role of experience in the learning process. By engaging in concrete experiences, reflecting on these experiences, conceptualizing abstract ideas, and actively experimenting with new knowledge, learners can achieve a deeper and more meaningful understanding of the subject matter (Kolb, 1984).

ELT in Music Education

Unsurprisingly, the ELT model has become a robust framework across various educational domains, including music education. The incorporation of Experiential Learning Theory (ELT) within music education has evolved significantly over the years. This progression is based on the various educational philosophies, theories, and practical applications in the field of music instruction.

The application of the model within music education began to gain prominence in the latter half of the 20th century. Music educators recognized the potential of experiential learning to enhance both the acquisition of musical skills and the understanding of musical concepts. Edwin E. Gordon's Music Learning Theory, which emerged in the 1970s, was one of the first to explicitly integrate experiential learning principles into music education. Gordon's theory emphasized the importance of audiation—the ability to hear and understand music in the mind—and advocated for a sequential learning process grounded in active engagement and reflection (Hopkins, 1993).

During the 1980s and 1990s, Kolb's ELT model urged educators to shift towards more student-centered music-making, improvisation, and composition practices, emphasizing active participation. These practices aligned with Kolb's learning cycle, allowing students to reflect on their learning processes, conceptualize new musical ideas, and experiment with their acquired knowledge (Holman, Pavlica, & Thorpe, 1997).

Additionally, there has been a growing focus on the emotional and social development facilitated by music education. Music educators are increasingly using experiential learning to foster emotional intelligence and social skills, acknowledging that musical experiences can significantly influence personal growth and interpersonal relationships (Freire, 1992).

In contemporary music education, the use of ELT is well-established and continues to evolve. Modern educational programs emphasize collaborative learning, the integration of technology, and interdisciplinary approaches. Digital tools and interactive platforms have expanded the scope of experiential learning, enabling students to engage with music in innovative ways and reflect on their experiences in real-time (Kayes, 2002).

In summary, the historical development of incorporating Experiential Learning Theory in music education illustrates a progressive shift toward dynamic, student-centered learning environments. From its philosophical origins to its modern applications, ELT has profoundly influenced music education by emphasizing the critical role of active experience, reflection, and interpersonal interaction in the learning process. Accordingly, Kolb's Experiential Learning Theory (ELT) provides a robust framework that supports this research; these components are crucial for extracting musical components from the auditory environment based on soundmapping activities in music education. ELT's focus on active engagement aligns perfectly with the direct exploration and transcribing of environmental sounds, encouraging students to make meaningful connections between their auditory experiences and musical creativity. The reflective and conceptual phases of ELT help students critically analyze their auditory experiences and integrate these insights into their musical ideas, fostering both creativity and critical thinking. Consecutively, the collaborative aspect of ELT supports peer learning and the appreciation of diverse perspectives, which are essential for the group-based soundmapping activities in this study. Thus, ELT provides a comprehensive framework that enhances the study's objectives of improving student engagement, creative thinking, and environmental awareness through experiential learning.

While much of the existing literature on ELT in music education has focused on traditional classroom settings and structured musical activities, this study introduces an innovative approach

by integrating a particular soundmapping activity, which takes place outdoors. Unlike previous studies that primarily emphasize the development of musical skills within controlled environments, this research extends the application of ELT to outdoor and real-world settings, where students interact directly with their auditory environment. By exploring how soundmapping can inspire musical compositions with environmental sounds, this study broadens the scope of ELT in music education. This approach contributes to the field by providing new insights into the dynamic and interactive processes of developing music composition through soundmapping shaped by the principles of Experiential Learning Theory.

3.2 Soundmap Applications in Education

The evolution of soundmapping in education has seen various approaches and applications, each contributing uniquely to the field. In the late 1970s, R. Murray Schafer's pioneering work laid the foundation by introducing soundscape studies, emphasizing the importance of listening to our environment and valuing its acoustic dimensions. Despite its establishment over 50 years ago and its broad potential, the field remained scholarly and underdeveloped, possibly due to the dominance of its eco-critical side. This section provides a selection of soundmap-related research that presents where this thesis stands in literature.

In parallel with Schafer’s principles, Mark Pedelty's research in 2013 brought a more interdisciplinary approach to the connection between music content and ecology. Pedelty's work demonstrated how music can be a medium for ecological awareness and activism. His studies underscored the potential for integrating ecological perspectives into music education, although the primary focus remained on theoretical and ecological dimensions rather than practical applications in the educational medium.

By 2018, literature is introduced to more profound works advocating for an eco-literate pedagogy in music education, particularly by Daniel J. Shevock (2012). Shevock's call for integrating ecological and social justice issues into music education resonated with earlier suggestions for a broader vision of music education, as proposed by Morton in 2012. Shevock emphasized the need for an interdisciplinary approach that connects music education with pressing global issues such as climate change, advocating for a curriculum that is both ecologically aware and socially engaged. While having provided a more pedagogical framework for the field, his study connects more with the eco-critical aspect of the connection between music education and the environment rather than the music inspirational aspect for which this thesis advocates.

Nevertheless, a recent study provided a rather inspirational use of the environment in music education. Millie Locke's work in 2022 focused on eco-literate pedagogy and music education within the context of New Zealand's *Enviroschools programme*. Locke's research provided practical examples of how music education can support environmental education through collaborative and creative projects. Her work illustrated the integration of ecological themes into music education, emphasizing student-led initiatives and community involvement. While her work introduces a novel approach that blends musical creativity with ecological education, it primarily emphasizes the significance of environmental values. Because it assumes “eco-literacy,” which seeks sustainability as a community practice (Goleman et al., 2012; p. 10) and a commitment to life and its preservation (Orr, 1992; p. 133). Despite being innovative and having contributed to environmental compositional grounds for this thesis, Locke’s work aligns with the environmental sustainability focus. Because her study utilizes environmental inspiration and related compositions to foster a sense of rootedness in a locality for the students. Therefore, even though the environment-based inspirational activities and collaborative compositions align with the practical

principles of this thesis, this thesis showcases its uniqueness in that the activities seek a creative benefit of the environment rather than a strong focus on the preservation or appreciation of it.

Despite these advancements, this thesis diverges from the above-mentioned studies by proposing soundmapping as a means of creative practices within a pedagogical framework – as an experiential learning method – specifically designed for music education. This research utilizes soundmapping activities in both urban and natural environments to inspire music compositions. This way, it acknowledges the value of natural soundscapes, as well as any other kind of soundscape. This approach not only broadens the auditory experience for students but also more clearly and directly links these experiences to inspirational applications rather than eco-critical applications. Specific to this study, through utilizing soundmapping, enhancing students' auditory awareness and collaborative-creative practice is highlighted.

While existing research primarily focuses on theoretical frameworks such as ecological awareness and ecocriticism, my thesis emphasizes another potential of the field: acoustic experiential, hands-on practices in music education. By integrating soundmapping into the curriculum, I provide a structured method that enhances student engagement and fosters creativity through real-world auditory experiences. This pedagogical innovation moves beyond the ecological and environmental frameworks of earlier studies, offering a novel approach that directly impacts music education in a private middle school setting.

Furthermore, the primary difference lies in the specific implementation and focus of soundmapping. While previous studies have integrated ecological and environmental awareness into music education, they have not explored soundmapping as a distinct experiential learning method. My research fills this gap by demonstrating how soundmapping can be a powerful tool to connect students with their auditory environment, fostering both an appreciation for natural and

urban soundscapes and encouraging the creation of original music based on these experiences. This focus on experiential learning, practical application, and direct student engagement distinguishes my thesis from the broader theoretical and interdisciplinary discussions prevalent in existing literature.

Chapter 4: Methodology

This section comprises four main parts: Experiential Learning Theory in Practice, Soundmapping in Practice, Research Questionnaire, and Method Outline. The ELT section establishes the method of development, its different types it, and the general procedure for effective experiential learning. The soundmapping section covers different types (*analog*[2]*)* soundmapping in practice and its application stages. Following the subsequent Research Questionnaire, the methodology section is concluded with the Method Outline.

4.1 Experiential Learning Theory in Practice

Experiential Learning Theory (ELT), developed by David Kolb in 1984, builds upon the works of scholars, namely John Dewey, Kurt Lewin, and Jean Piaget. ELT suggests that learning is a dynamic process where knowledge is generated through the transformation of experience. Kolb's model highlights that effective learning involves a cycle consisting of four stages: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. This model advocates for a comprehensive approach to learning, where active participation and reflection on experiences are crucial.

Over time, the use of ELT has broadened to include various educational settings and disciplines. Initially focused on individual learning experiences, it now encompasses collaborative and social learning environments, recognizing the importance of social interaction in learning. Advances in technology have further expanded ELT, incorporating digital tools and interactive platforms that

[2] Although different types of soundmapping are likely applicable to this methodology as well, for this thesis, analog soundmapping technique was chosen for its material convenience and intuitive application process in order to achieve faster results that are at the same time less compromised by the unfamiliarity to the new activity.

provide more immersive and versatile learning experiences. These innovations have led to more sophisticated applications of ELT, including virtual simulations and online collaborative tools.

Kolb's ELT revolves around a four-stage learning cycle that is crucial to implementing an effective method for this research. Here is a brief definition of the stages and a brief summary of their implementation in this thesis:

1. **Concrete Experience (CE)**: This stage involves direct engagement in new experiences. To facilitate this stage in this study, students participate in soundwalks that require mindful listening of urban and natural settings, actively listening, and distinguishing sounds.
2. **Reflective Observation (RO)**: After experiencing something new, learners reflect on their experiences, analyzing them from various perspectives and thinking critically about their observations. In this study, this stage is connected to analog soundmapping practice, where students reflect on the sounds experienced during soundwalks by transcribing them into visual representations of sounds.
3. **Abstract Conceptualization (AC)**: Learners interpret their reflections to develop abstract concepts and theories. They create generalizations that can be applied to new experiences. In this study, students collaboratively conceptualize transcribed sounds as components of musical compositions, developing ideas for creative use, e.g., “birds chirping can be musically expressed through high-pitched thrills” or “baseline of my song could sound like the rhythm of the cashier beeps,” etc.
4. **Active Experimentation (AE)**: Learners apply their new concepts through experimentation and testing theories in real-world situations. In this study, students collaboratively transform their ideas of potential musical use of their transcribed sounds

into realized musical compositions, and they perform and receive feedback from the classroom.

4.1.1 Application of ELT Through Soundmapping

In this research, ELT is applied through *analog* soundmapping, a traditional yet effective method aligning with ELT principles. This involves students actively **experiencing** their auditory environment by conducting soundwalks in urban and natural settings. They then **reflect** on these experiences through soundmapping, **conceptualize** the sounds transcribed musically, and perform an **active experiment** with these concepts by creating musical compositions. This process enhances auditory awareness while fostering critical and creative thinking, as well as collaboration.

- **Concrete Experience (CE)**: Students participate in soundwalks, actively listening and recording sounds, engaging directly with their surroundings.
- **Reflective Observation (RO)**: Post-sound walk, students reflect on recorded sounds, discussing their observations and considering the characteristics and sources of the sounds.
- **Abstract Conceptualization (AC)**: Students develop abstract concepts about using transcribed sounds in musical compositions, creating theories to explain relationships between different sounds and their potential musical applications.
- **Active Experimentation (AE)**: Students incorporate recorded sounds into musical compositions, perform, receive feedback, and refine ideas through iterative experimentation.

Consequently, by employing soundmapping, this research provides an immersive learning experience that encourages students to consider environmental sounds as potential musical

components and to engage with their environment. This method exemplifies the nature of ELT, as students sequentially engage with, reflect on, and apply their experiences creatively.

In conclusion, applying ELT in this research supports the development of students' auditory and musical skills and promotes critical and creative thinking and collaboration. ELT's structured yet flexible approach allows students to actively engage with their learning process, also making it a valuable framework for exploring the further educational impacts of soundmapping activities in music education.

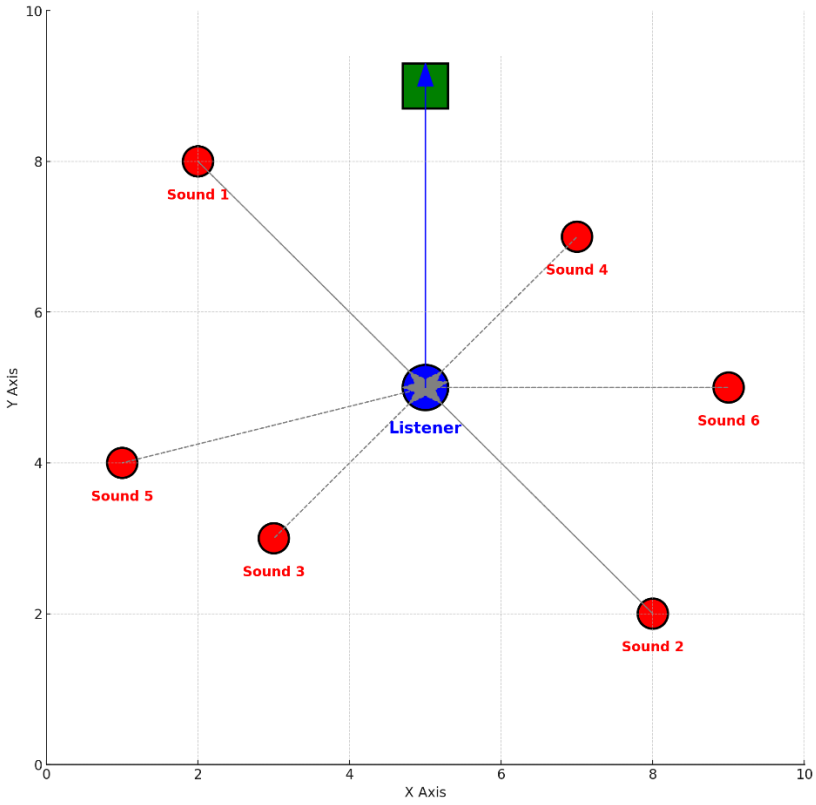
4.2 Soundmapping as a method

Soundmapping, a technique combining acoustic analysis with spatial representation, was developed to capture and illustrate the auditory environments of particular areas. This approach was first implemented by Canadian composer and environmentalist R. Murray Schafer during the 1970s through the World Soundscape Project. Schafer aimed to document and comprehend the acoustic ecology of diverse environments, highlighting the significance of soundscapes in influencing human experiences and interactions. He used soundscape applications, such as soundmapping, to highlight the value and importance of preserving natural soundscapes by focusing on anthropic noise pollution.

Soundmapping consists of systematically analyzing and commonly also recording sounds in a designated area and then visualizing these sounds spatially on a map. This process offers both visual and auditory insights into the distribution of sounds across a landscape. It can reveal zones of varying sound intensity, identify specific noise sources, and characterize the overall acoustic environment. Initially, soundmapping was a manual task where researchers conducted field (audio) recordings using basic equipment and annotated physical maps with information about sound

recordings, sources, and locations. They documented the types and origins of sounds, their intensity, and the times they occurred, creating a simple yet informative map of the soundscape.

Figure 3: Soundmapping Concept



Source: Author's work

Technological advancements have significantly enhanced soundmapping, making it a more precise and sophisticated practice. Early soundmapping efforts were labor-intensive and relied on the subjective observations of researchers, introducing potential bias and variability. However, the development of portable digital recording devices, geographic information systems (GIS), and advanced sound analysis software has transformed the field. Modern soundmapping utilizes high-fidelity recording equipment to capture detailed sound data, while GIS technology facilitates precise spatial mapping and integration of various data layers on a digital platform. Sound analysis

software processes and analyzes these recordings to generate detailed metrics such as sound pressure levels, frequency range, and temporal patterns. This technological progress has allowed researchers to create comprehensive, data-driven representations of soundscapes, enabling more accurate and nuanced analyses of acoustic environments.

The following paragraph provides a summarized categorization of common practices as an overview of various soundmapping types that have emerged to serve different research objectives and applications:

1. **Noise Mapping:** Focuses on identifying and visualizing sources of noise pollution in urban environments. Urban planners and public health officials use this type of mapping to assess noise impacts on residents and develop mitigation strategies.
2. **Soundscape Mapping:** Captures the qualitative aspects of an environment's soundscape, including natural sounds, human activities, and cultural events. This approach is used in environmental studies, cultural heritage documentation, and tourism to preserve and promote a place's unique acoustic characteristics.
3. **Ecological Soundmapping:** Utilized in ecological and wildlife studies to monitor and analyze the sounds of various species and their habitats. This type of mapping aids in understanding the acoustic behavior of animals and the impact of environmental changes on their communication and behavior.
4. **Interactive Soundmapping:** Develops interactive digital maps that allow users to explore and listen to recorded sounds from different locations. This method is used in educational contexts, virtual tours, and public engagement projects to provide an immersive experience of a place's soundscape.

This evolution of soundmapping practices showcases the growing recognition of sound as a crucial element of environmental and cultural studies. By combining auditory data with spatial analysis, soundmapping offers a powerful tool for understanding and managing the acoustic dimensions of our world. This study utilizes the *soundscape mapping* approach from the overview list provided previously, and this methodology section further details the particular techniques and tools, data collection, analysis, and visualization techniques employed to achieve the research objectives.

4.2.1 Analog Soundmapping Method

This research employs a soundmapping method that relies on traditional techniques involving paper and pen for the transcription of the auditory environment, which will be referred to as "Analog Soundmapping" from this point on. This approach, rooted in the early practices of soundmapping, involves observers manually transcribing and mapping the sounds around the individual in a chosen location using basic tools such as a pen and paper. Despite the advancements in digital technologies, analog soundmapping remains valuable for its simplicity and the direct engagement it fosters between auditory and visual perception.

In this method, observers venture into the field equipped with notebooks/notepads, pens, and sometimes basic audio recording devices. They listen attentively to the soundscape, noting the types of sounds, their sources, intensity, and temporal patterns. These observations are then annotated on a physical map, creating a visual representation of the acoustic environment. The process is inherently qualitative, allowing for rich, descriptive accounts of the soundscape that might be overlooked by purely quantitative methods.

In analog soundmapping, the observer can use a variety of creative and detailed methods to capture and represent the acoustic environment visually on paper. Common techniques follow as

illustrating the movement of the pitch with drawings, where ascending or descending lines indicate changes in pitch over time; drawing or writing the name of the sound source, also noting possibly its location and characteristics; illustrating the texture of the sound through shapes and patterns, for example, jagged lines might represent a harsh and grating sound, while smooth, wavy lines could depict a gentle, flowing sound; writing down code words to remind specific textures, pitches or timbre, providing a shorthand reference for complex auditory experiences; exclamation drawings, such as bursts or star lines to transcribe the intensity of a sound, highlighting sudden loud noises or significant changes in volume. Additionally, observers may use color coding to differentiate between the various timbre of sounds or to indicate the personal, emotional response stimulated by certain sounds. This combination of visual and textual notes creates a rich, multifaceted representation of the soundscape, capturing both the objective and subjective elements of the auditory environment, which improves delayed recollection. In summary, the options for notation are:

Illustrating Pitch Movement: Using ascending or descending lines to indicate pitch changes.

Drawing or Writing Sound Sources: Noting the location and characteristics of sound sources.

Illustrating Sound Texture: Using shapes and patterns to represent the texture of sounds (e.g., jagged lines for harsh sounds, smooth lines for gentle sounds).

Code Words and Symbols: Employing shorthand to remember specific textures or pitches.

Exclamation Drawings: Using bursts or star shapes to denote sound intensity.

Color Coding: Illustrating sound through color connections to highlight timbre or emotional response.

Analog soundmapping is particularly useful in environments where digital recording equipment may be impractical or where a more abstract but immersive and hands-on approach is desired. It encourages observers to develop a keen sense of auditory mindfulness and to engage deeply with the environment, as this activity solely relies on the momentary perception of the listener. Furthermore, it can be an effective preliminary step in soundmapping, providing foundational insights that can guide more detailed digital analyses.

In this research, analog soundmapping serves as a primary tool for capturing the initial soundscape data that will then be facilitated as a composition-inspiring tool. By documenting sounds through direct observation and manual annotation, researchers can create detailed soundmaps that reflect the nuances of the environment, presumably in an individualized way. Choosing the analog soundmapping method in this research highlights the importance of direct, sensory engagement for improved recollection of musical ideas and enriches the research process, ensuring a multifaceted, kinesthetic exploration of acoustic environments.

4.3 Questionnaire Design

The design of the questionnaire for this study was grounded in several key theories and methodologies to ensure it effectively captured the students' experiences and perceptions of the soundmapping activity. It was crafted to gather both quantitative and qualitative data. The framework for the questionnaire design is as follows:

Cognitive Load Theory: Cognitive Load Theory emphasizes the importance of minimizing cognitive load to enhance the accuracy of responses (Sweller, 2011, p. 37). In line with this theory, the questionnaire was crafted using simple language and translated into Czech to

ensure clarity and comprehension for all students. This approach reduces unnecessary cognitive demands, allowing respondents to focus on the content of the questions.

Content and Construct Validity: To ensure the questionnaire accurately measured the intended constructs, questions were designed to align closely with the objectives of the soundmapping activity. This focus on content and construct validity ensures that the data collected is relevant and accurately reflects the constructs being studied, such as familiarity with soundmapping, auditory awareness, creativity, and collaborative skills.

Mixed-Methods Approach: The questionnaire incorporated a mixed-methods approach to provide a comprehensive understanding of students' personal experiences. This involved including both closed-ended questions – e.g., multiple-choice and Likert scale items – to gather quantitative data and open-ended questions to capture qualitative insights. This combination allows for both statistical analysis and detailed narrative understanding.

Reliability and Validity: Anonymity was preserved to reduce social desirability bias, encouraging honest and uninfluenced responses.

Post-Activity Administration: The questionnaire was administered on the same day after the soundmapping session to capture immediate reflections and minimize recall bias. This timing ensures that students' experiences are fresh in their minds, resulting in more accurate and reflective responses.

4.4 Method Outline

The methodology for this study is organized into four distinct parts to comprehensively capture the educational impact of soundmapping activities on students' auditory engagement, creative thinking, and collaborative skills:

1. Primary Researcher's Presentation:

The study begins with an introductory presentation by the primary researcher, designed to familiarize students with the concept of soundmapping. This session provides foundational knowledge, explaining the significance of environmental sounds and how they have been incorporated into musical compositions in various genres.

2. Soundmap:

Following the presentation, students participate in a soundwalk in an urban environment and/or a natural environment. Here, they engage in individual analog soundmapping by manually transcribing various sounds.

3. Collaborative Brainstorming:

Students then form self-chosen groups to discuss possible musical uses of their individually noted sounds. This enhances the chance of considering an expanded selection of musical elements. The students then perform a second soundwalk in a natural setting, a nearby nature park.

4. Group Composition and Presenting to the Classroom:

After the soundmap activity facilitated by soundwalks, students regroup to discuss and compare their findings from both environments. They collaboratively use their soundmaps to plan and then create musical ideas, motifs, and rhythms for music compositions, integrating the transcribed sounds into their pieces. Groups then finally share their compositions with the rest of the classroom.

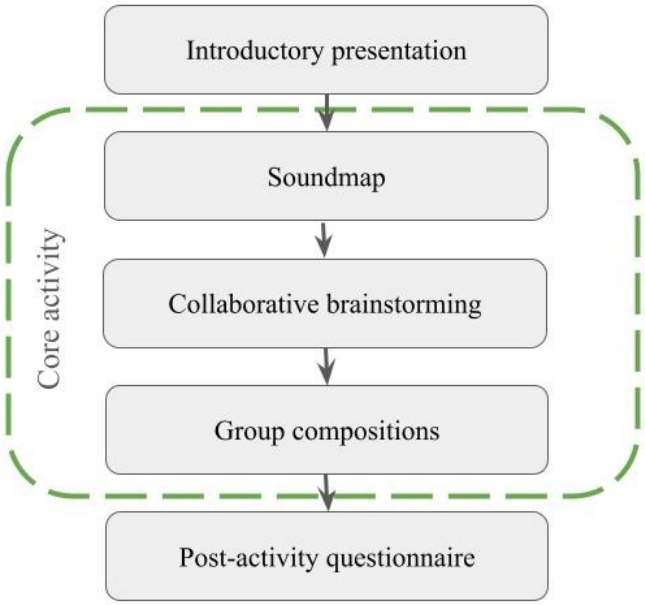
5. Post-Activity Questionnaire:

The final part of the methodology involves administering a complimentary questionnaire to the students. This tool is designed to gather both quantitative and qualitative data on

their experiences, assessing familiarity with soundmapping, ease of sound identification, creativity, and collaborative efforts.

This structured approach ensures a thorough exploration of the educational benefits of soundmapping, combining hands-on activities with reflective assessment. The method summary is visualized in Figure 4.

Figure 4: Methodology Outline



Source: Author's work

This methodology can be extended to include an evaluation of the compositions' musicality, and this is one area that I want to further explore in my future academic journey as it is a broad field of research. Making it also a potential further research area for the intersection between soundmapping and music education.

Chapter 5: A Pilot Study and Results

This section presents a pilot study conducted for this thesis and its findings. It covers the implemented study's focus group, the setup, the stages of activity, and the content of music compositions. It's followed by evaluations of the questionnaire results and the observation notes. Finally, an analysis is provided of the environmental inspiration utilized in the music compositions of the participant students.

This pilot study is conducted to test the feasibility and design of the proposed soundmap-centered methodology. It aims to establish a foundation for future research in the intersection between environment and music inspirational practices.

5.1 Focus Group

The participants in this study were 20 students from a private (Czech) middle school, a school in Prague recognized for its active engagement in project-based experiential learning activities. The student group consisted of mixed-gender individuals aged 11-12. This specific age group was chosen because it represents a critical developmental stage where creativity and collaborative skills can be effectively nurtured through experiential learning methods.

To ensure the student's well-being and sense of security during the activities, their regular music teacher accompanied the group throughout the entire process. The presence of their own music teacher, who is a native Czech speaker fluent in English, was instrumental in facilitating communication and providing language support whenever necessary. Since the students were under the supervision of a trusted and known adult, this not only eased any potential concerns regarding language barriers but also ensured a stable and secure environment, allowing the students to fully engage in the soundmapping activities without any concern about their security.

Moreover, the locations selected for the soundwalks—a nearby mall and a nature park—were chosen for their proximity to the school. This ensured that the students were never far from the school premises, allowing for better time consumption and a quick return if needed. All locations were accessed and returned from by foot. The short walking distance to these locations minimized any potential risks associated with traveling and provided an additional layer of security for the students. The close proximity also ensured that the activities could be conducted within a manageable time frame, maximizing the students' focus and participation.

Overall, the supportive and Project-positive environment of the school, combined with careful planning and the presence of a trusted music teacher, ensured that the students were comfortable, engaged, and able to fully benefit from the educational experience offered by the soundmapping project. The involvement of their own teacher, in particular, was a crucial factor in ensuring the smooth execution of the activities in a short period, such as the 90-minute project on which this research paper centered.

5.2 Procedure

The procedure for this study was carefully planned and executed to ensure a comprehensive and engaging music-educational experience for the students. The study was conducted over a 90-minute session in a project-based style, incorporating several carefully designed activities to engage the students in soundmapping and musical composition.

1. Introduction to Soundmapping (10 minutes):

The session began with a brief presentation to introduce the concept and the use of soundmapping. Due to a technical problem with the classroom equipment, there was a 5-minute delay at the start. This issue was promptly resolved, and the introduction covered the use of

environmental sounds in music composition by showcasing listening samples from various musical genres, the definition of soundmapping and its significance in retaining auditory memory, and the various methods by which analog (handwritten) soundmaps can be created. The primary researcher, supported by the student's music teacher, used visual and audio aids and examples to illustrate these concepts, ensuring that the students grasped the foundational ideas before proceeding.

2. Soundwalk at the Mall (15 minutes):

Following the introduction, the students were taken to a nearby mall, chosen for its vibrant urban soundscape. Before entering the mall, the primary researcher and the music teacher provided clear instructions on how to conduct the soundmap. Students were equipped with notepads, paper, and pens to manually record the sounds they encountered. They were encouraged to note specific sounds, such as conversations, cash registers, background music, and ambient noises, as can be seen in Figure 5 and Figure 6. Students were given the option to choose their preferred analog soundmapping techniques, leading to a variety of methods being employed:

Illustrating Pitch Movement: Using ascending or descending lines to indicate pitch changes.

Drawing or Writing Sound Sources: Noting the location and characteristics of sound sources.

Illustrating Sound Texture: Using shapes and patterns to represent the texture of sounds (e.g., jagged lines for harsh sounds, smooth lines for gentle sounds).

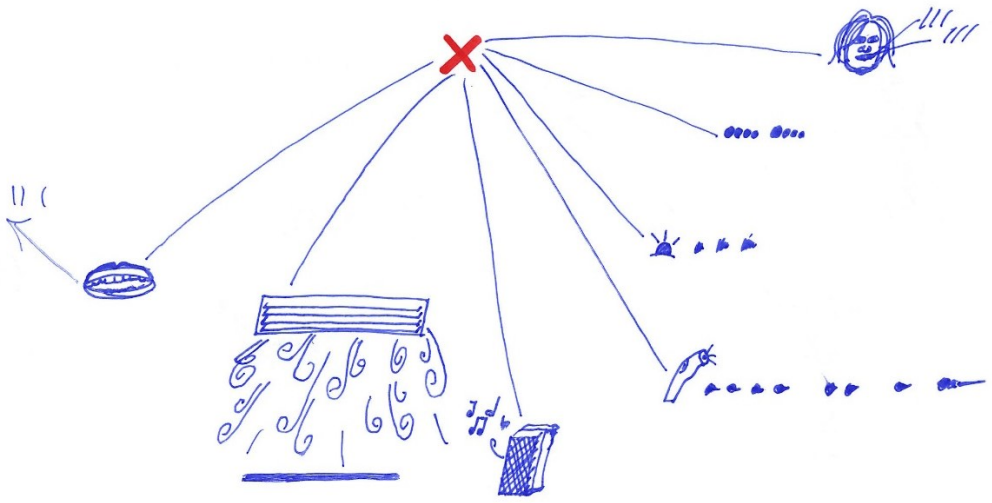
Code Words and Symbols: Employing shorthand to remember specific textures or pitches.

Exclamation Drawings: Using bursts or star shapes to denote sound intensity.

Interestingly, there wasn't a common method adopted by all students; instead, a mix of varied methods was observed. This diversity in approaches highlighted the convenience and usefulness of each method. This combined use of techniques also shows the students' creativity and personal engagement with the soundmapping process.

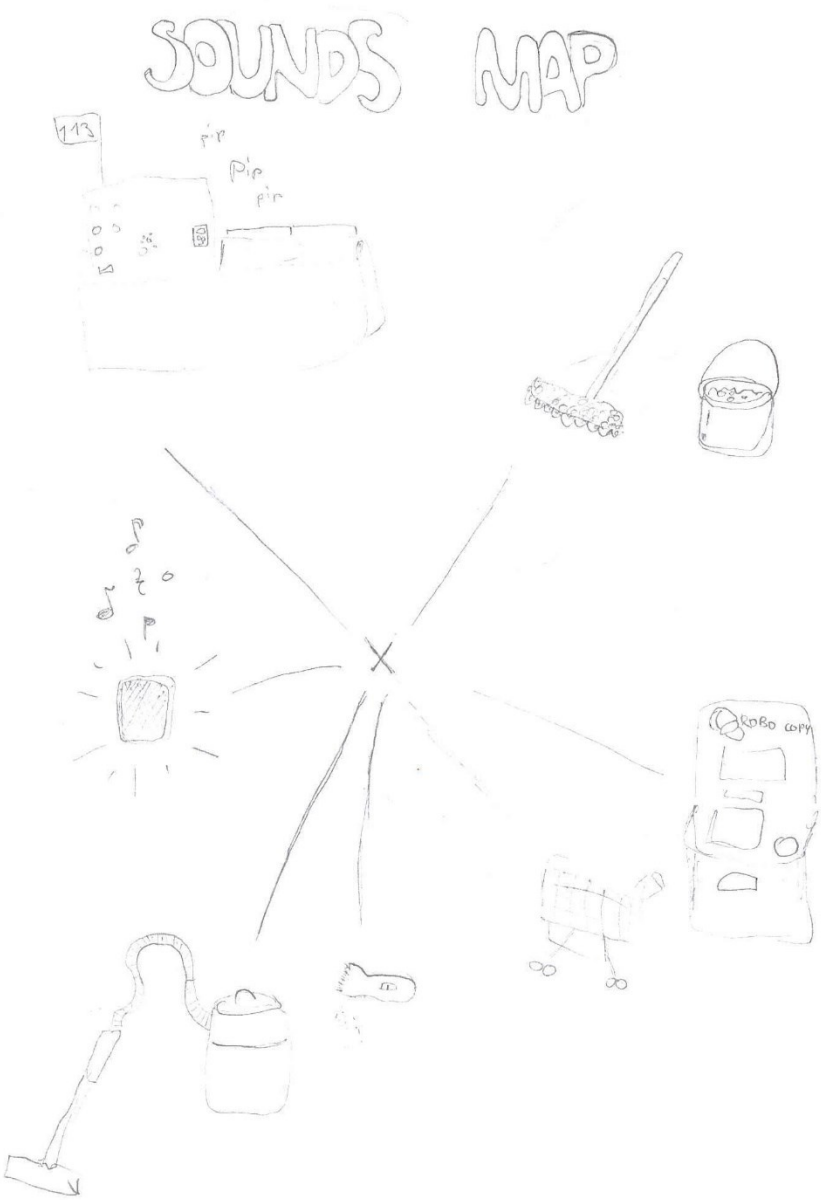
By integrating these notational techniques, the analog soundmapping method provided a comprehensive and engaging way for students to interact with their environment and translate their auditory experiences into creative outputs.

Figure 5: Soundmap 1



Source: Student 1's creation during the method application

Figure 6: Soundmap 2



Source: Student 2's creation during the method application

3. Group Discussion at the Mall (10 minutes):

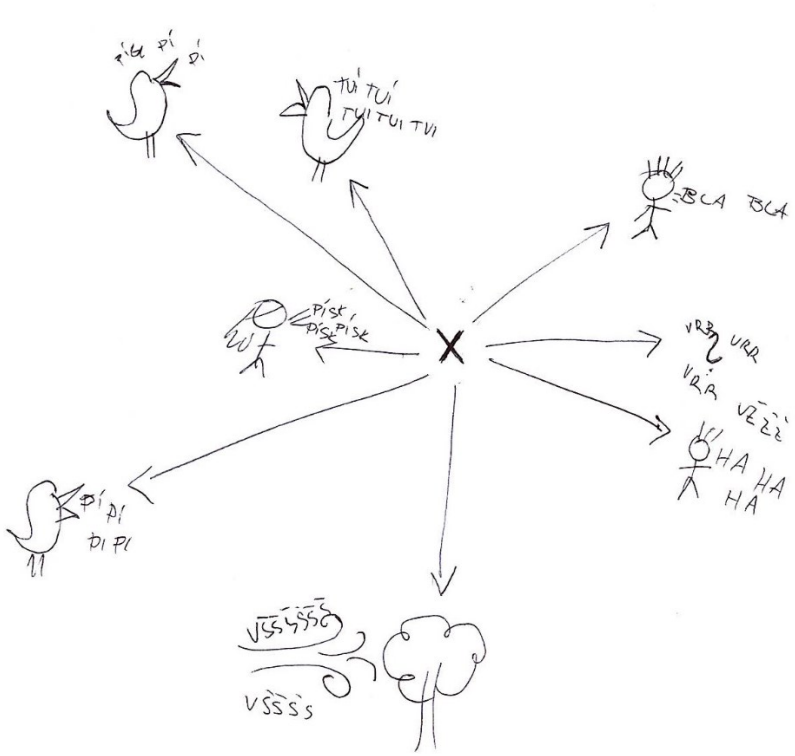
After the soundwalk, the students were divided into small groups of 3-5 members to discuss their observations. Students chose their own groups, and this led to positive in-group dynamics. Each group shared the sounds they had transcribed on their paper and brainstormed potential

musical ideas inspired by these sounds. The discussions were facilitated and observed closely by the primary researcher, who repeatedly emphasized that every student had the opportunity to contribute and that small ideas lead to big changes. This collaborative brainstorming session aimed to foster creativity and teamwork, allowing students to explore how everyday urban sounds could be transformed into musical elements.

4. Soundwalk at the Nature Park (15 minutes):

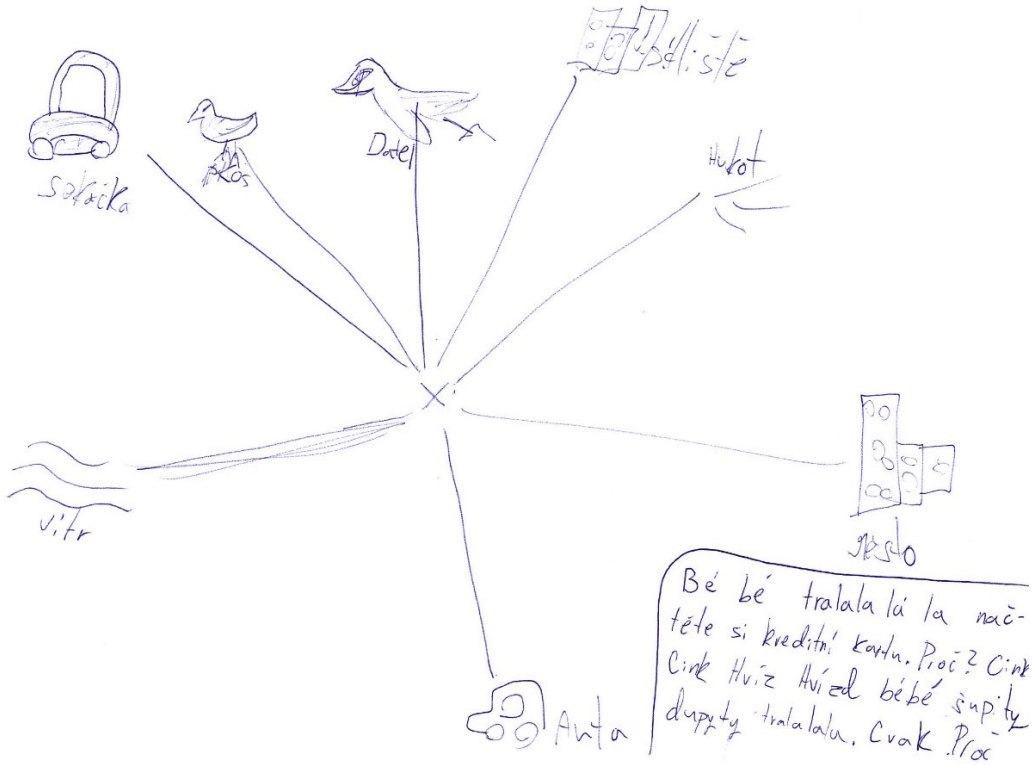
The next phase involved a short walk to a nearby nature park, providing a contrasting sound environment. The chosen center in this park was fairly disconnected from the urban sounds; there weren't roads nearby, and any people around, and the only unnatural sound was a distant construction machine making a chainsaw-like sound. Similar to the mall activity, students were instructed to conduct a soundwalk, this time focusing on natural sounds such as birds chirping, leaves rustling, and wind blowing. They transcribed these sounds, this time on the back side of their note paper, as can be seen in Figure 7, Figure 8, and Figure 9. This part of the activity was intended to expose students to the richness of natural soundscapes, enhance their ability to discern and appreciate environmental sounds and enrich their sound palette.

Figure 7: Soundmap 3



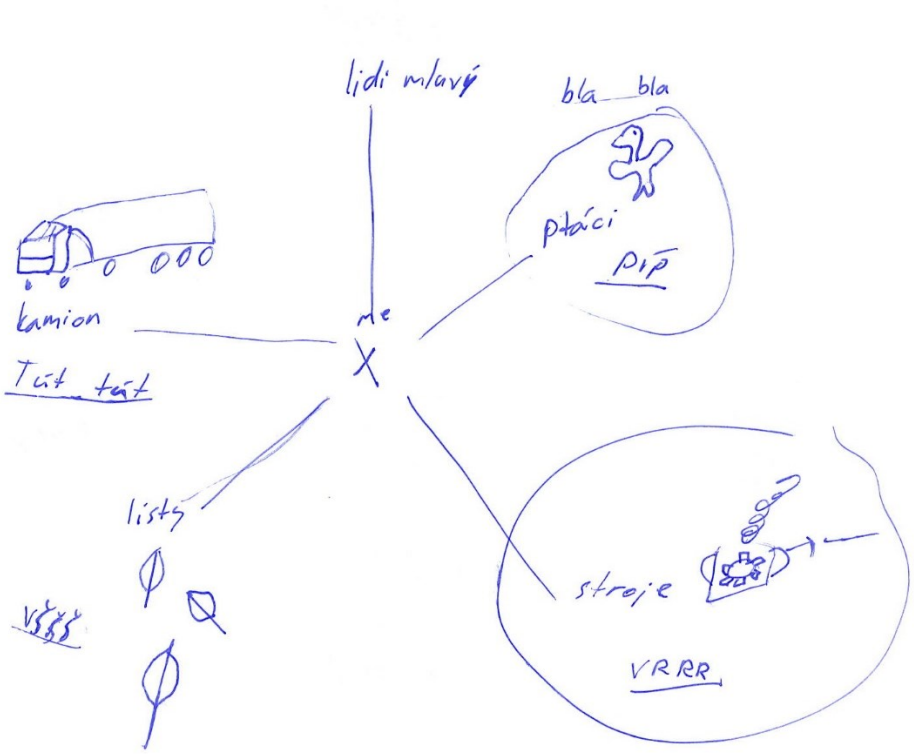
Source: Student 3's creation during the method application

Figure 8: Soundmap 4



Source: Student 4's creation during the method application

Figure 9: Soundmap 5



Source: Student 5's creation during the method application

5. Group Discussion at the Nature Park and Return to School (14 minutes):

Once the soundwalk at the nature park was completed, students reassembled into their groups to discuss the sounds they had transcribed and headed back to the school. They were advised to compare these natural sounds with the urban sounds from the mall, discussing differences and similarities. The groups then brainstormed musical ideas incorporating natural sounds with the ongoing encouragement of the primary researcher. This activity emphasized the contrast between urban and natural soundscapes and encouraged students to think creatively about how these sounds could be used in musical compositions.

6. Composition Planning (7 minutes):

After returning to the school, the students were given 7 minutes to plan a composition for their final presentation. They were instructed to use their soundmap notes from the two soundwalks to design a song, deciding on the instruments, how they would incorporate the transcribed sounds, and who would play which instrument during their presentation. This planning phase allowed students to clearly organize their ideas and prepare for their performances.

7. Group Performances (16 minutes):

Each group was given 4 minutes to perform their planned compositions. After each performance, the rest of the class was to guess the connections between the sounds from the environment and what they heard in the composition, and then the composer group revealed the real connections. Anticipated connections and real connections often overlapped with a few exceptions. This showed that many students were able to successfully translate their auditory perception into a musical expression.

The performances varied widely in style, reflecting the students' creativity and the diverse range of sounds they had transcribed. Some groups created songs with lyrics and vocal rhythmic patterns using urban sounds from the mall, while others composed ambient pieces utilizing natural sounds from the park. The primary researcher observed and provided feedback on each performance, noting the originality, use of environmental sounds, and collaborative effort displayed by the students.

8. Post-Activity Questionnaire:

To conclude the session, students completed a one-page questionnaire designed to capture their feedback on the activity. The questionnaire included multiple-choice questions about their prior knowledge of soundmapping, enjoyment of the activity, favorite parts, willingness to participate

again, and any challenges they faced. An open-ended section to most of the questions allowed students to provide additional comments and reflections on their experiences.

The entire procedure was designed to be engaging and educational, providing students with a unique collaborative opportunity to explore soundmapping and its potential application in music education. By carefully structuring each phase of the activity and ensuring clear instructions and support, the study aimed to maximize student participation, creativity, and learning outcomes. The combination of urban and natural sound environments, along with collaborative group work, created a rich and varied learning experience that aligned well with the already-existing experiential learning endeavors of the school.

5.3 Post-Activity Questionnaire

This section provides information about the outcomes of the soundmapping activity, the students' compositions, and the post-activity questionnaire. The purpose of this section is to put forth tangible findings.

The data collection process was meticulously designed to capture both quantitative and qualitative insights from the students regarding their experience with soundmapping and its impact on their creativity and collaborative skills, and insights about the composed music pieces. The primary instrument for data collection was a comprehensive questionnaire, which was administered at the end of the 90-minute session, and the primary researcher's evaluation of the final compositions. This questionnaire was initially crafted in English but was translated into Czech by the students' music teacher to ensure complete understanding and accurate responses from the students, who are native Czech speakers.

Due to time limitations on the day of the activity, the decision was made to have the students complete the questionnaire by the end of the same day. It was facilitated by distributing the questionnaires to the students and ensuring they were collected later that day, thereby maintaining the flow of the school day. This process ensured that the responses were fresh in the students' minds, providing accurate and immediate feedback on the activity. The completed questionnaires were later collected from their music teacher.

5.3.1 Questionnaire Administration

The questionnaire consisted of 16 questions, including both multiple-choice and open-ended formats. The reason why multiple-choice was offered was to prevent a possible lack of engagement and time limitations. This style is more convenient and less time-consuming than the open-ended format. By using the multiple-choice format, the questionnaire aimed to collect as many answers as possible from the sample group based on the presumption that there might be a higher risk of losing engagement or cooperation due to the age range of the sample group. The questions aimed to gather demographic information, assess familiarity with soundmapping, evaluate the ease of identifying and mapping sounds, compare sound environments, and explore the impact of soundmapping on musical creativity and collaborative efforts.

Translation and Facilitation: The music teacher translated each question from English to Czech, ensuring that all students understood the questions perfectly and could provide accurate responses.

Anonymous Responses: The questionnaire was designed to maintain anonymity, with no names asked, ensuring honest and uninfluenced answers from the students.

Quantitative Analysis: The multiple-choice responses were analyzed to determine overall trends and patterns among the students.

Qualitative Analysis: Open-ended responses were thematically analyzed to extract detailed insights into the students' experiences and perceptions.

5.3.2 Demographic Information of the Questions:

Gender: *1. What is your gender? Female [ ] Male [ ]*

- Data Analysis: The first question gathered demographic information by asking students to indicate their gender. Out of the 20 students, 11 were female, and nine were male. This demographic data was crucial for understanding the gender distribution of the group and analyzing if there were any significant differences in responses based on gender. The balanced gender ratio helped ensure that the findings could be generalized across both genders.

Familiarity with Soundmapping: *2. Before this activity, were you familiar with soundmapping? Very Familiar [ ] Familiar[ ] Not Familiar at all [ ]*

- Data Analysis: The responses to this question showed that 17 students were not familiar at all, three were somewhat familiar, and none were very familiar. This indicates that for the majority of the students, soundmapping was a novel concept. The lack of prior familiarity underscores the educational impact of the activity, as it introduced a new concept to the students, broadening their learning horizons.

Experience and Challenges with Soundmapping: *3. How easy did you find identifying and mapping sounds in the park? Very easy [ ] Somewhat easy [ ] Neutral [ ] Somewhat difficult [ ] Very difficult [ ] Why?(Optional):*

- Data Analysis: Students rated the ease of identifying and mapping sounds in the park. The responses varied, with two students finding it very easy, 11 somewhat easy, six neutral, and one student finding it somewhat difficult due to distractions from peers. This question helped assess the accessibility of the activity. The majority found the task manageable, but the response from the students who faced difficulties due to distractions highlights the importance of maintaining a well-conducted environment for such activities.

Sound Variety Comparison: *4. Compare the variety of sounds between the shopping mall and the park. More in shopping mall [ ] More in the park [ ] About the same [ ]*

- Data Analysis: Students compared the variety of sounds between the shopping mall and the park. The majority (16 students) reported more variety in the mall, while 4 found them about the same, and none found more variety in the park. This comparison highlighted the different auditory experiences provided by urban and natural environments. The overwhelming perception of greater sound variety in the mall may reflect the students' greater exposure and familiarity with urban sounds compared to natural ones.

Surprising Sounds: *5. What was the most surprising sound you mapped? Sound: _____ Why was it surprising?:*

- Data Analysis: Students were asked to identify the most surprising sound they mapped and explain why it was surprising. The responses included a range of sounds such as a chainsaw, finch, music from a radio, wind, and a vacuum cleaner, among others. The diversity of surprising sounds, including both urban (e.g., vacuum cleaner, shopping mall song) and natural (e.g., finch, wind), shows the wide range of auditory experiences students encountered. The reasons for finding these

sounds surprising often related to the context in which they were heard, highlighting how soundmapping can alter perceptions of everyday environments.

Impact on Listening Habits: *6. Has soundmapping changed how you listen to your surroundings? Greatly changed [ ] Slightly changed [ ] No change [ ]*

- Data Analysis: Students reported whether soundmapping had changed how they listen to their surroundings. While two students indicated a significant change, 12 reported a slight change, and 4 saw no change. This question aimed to measure the broader impact of the activity on students' auditory awareness. The fact that a majority noted at least some change suggests that soundmapping can effectively enhance environmental listening skills, even with a single session.

Challenges Faced During Soundmapping: *7. What challenges did you face while creating your soundmap? (you can tick multiple answers) Finding sounds [ ] Taking note of sounds [ ] Distinguishing sounds [ ] Other:*

- Data Analysis: Students identified specific challenges they faced while creating their soundmaps, such as finding sounds (8 students), taking notes of sounds (7 students), and distinguishing sounds (9 students). One student mentioned the challenge of 'making a song.' This variety of challenges reflects the complexity of the task and the diverse skills required to execute it. This shows that such activity has great potential as a project-teaching tool, as it utilizes multiple skills into one task in an engaging and collaborative way. Identifying and distinguishing sounds were the most commonly reported difficulties, indicating areas where additional support or practice might be beneficial in future sessions.

Musical Creativity and Collaboration: *8. How did soundmaps help you with musical ideas? (you can choose more than one option) Melody [ ] Rhythm [ ] Timbre(Tone color) [ ] Harmony [ ] Dynamics [ ] Texture [ ] Not at all [ ]*

Explain (Optional):

- Data Analysis: Students were asked how soundmaps helped them with musical ideas, with options such as melody (6 students), rhythm (9 students), timbre (8 students), dynamics (2 students), and texture (4 students). This question provided insights into the creative processes influenced by soundmapping. Rhythm and timbre were the most commonly cited areas of influence, suggesting that environmental sounds particularly inspire these aspects of musical creation.

Inspirational Sounds: *9. Did specific sounds inspire parts of your music?*

Yes [ ] No [ ] If yes, which sounds are they?:

- Data Analysis: The majority (18 students) indicated that specific sounds inspired parts of their music, while two did not find inspiration from the sounds. This question explored the direct impact of environmental sounds on musical creativity. The high rate of positive responses indicates that soundmapping can be a powerful tool for generating musical ideas. The detailed examples provided by the students illustrated how various sounds directly influenced their compositions.

Collaboration Influence: *10. Did working with classmates influence your creative process? Positively [ ] Negatively [ ] No effect [ ]*

- Data Analysis: Students evaluated the influence of working with classmates on their creative process. Most (18 students) found it positive, 1 had mixed feelings, and 2 saw no effect. This question aimed to assess the collaborative aspect of the activity. The overwhelmingly positive

response highlights the importance of teamwork and peer interaction in this creative project, which aligns with the principles of experiential learning and constructive social teaching.

Attention to Everyday Sounds: *11. You used sounds from the environment to create music. How did this experience affect your attention to everyday sounds?*

Increased a lot [ ] Increased a little [ ] No effect [ ]

- Data Analysis: While none indicated a significant increase, 15 reported a slight increase, and 5 saw no effect. This question explored the lasting impact of the activity on students' auditory awareness. The slight increase reported by the majority suggests that even brief exposure to soundmapping can heighten awareness of everyday sounds, though perhaps more substantial changes would require longer or repeated exposure. Such exposure has a promising potential to be explored in broader academic research, such as Ph.D. research.

Prior Consideration of Environmental Sounds: *12. Have you considered using environmental sounds in music before this? Yes [ ] No [ ]*

- Data Analysis: The responses to this question showed that 15 had not, while four had, indicating the novelty of the activity for most students. This suggests that the activity successfully introduced a new concept to the majority of the students, potentially expanding their creative toolkit.

Enjoyment and Challenges in Music Creation: *13. What did you enjoy most about creating music from soundmaps? New sounds [ ] Creative challenge [ ] Working with others [ ] Other:*

- Data Analysis: Students identified what they enjoyed most about creating music from soundmaps, with options including new sounds (6 students), the creative challenge (9 students), and working

with others (12 students). This question provided insights into the motivational factors behind the activity. Working with others and the creative challenge were the most enjoyed aspects, underscoring the value of collaboration in creative problem-solving in educational activities.

Challenges in Music Creation: *14. What was challenging about using a soundmap for creating music? Identifying sounds [ ] Translating sounds [ ] Nothing [ ] Other:*

- Data Analysis: Responses followed as identifying sounds (1 student), translating sounds into music (13 students), and finding nothing challenging (6 students). This question helped identify areas for improvement in future implementations of similar activities. Translating sounds into music was the most commonly cited challenge, suggesting that additional guidance or practice in this area could enhance the effectiveness of the activity.

Support for Creativity: *15. How has this experience supported your creativity?*

Supported a lot [ ] Supported a little [ ] No effect [ ]

- Data Analysis: The majority of students felt that the experience supported their creativity, with 1 reporting significant support and 17 reporting slight support, while 2 saw no effect. This question aimed to measure the perceived impact of the activity on students' creative abilities. The high level of reported support indicates that soundmapping can be an effective method for fostering creativity in educational settings.

Future Use of Soundmapping: *16. Would you use soundmapping in future projects?*

Yes [ ] No [ ]

Why or why not?:

- Data Analysis: Finally, a significant majority (17) said yes, citing reasons such as it being a fun and challenging activity, while two said no, indicating a lack of interest. This question provided insights into the potential long-term adoption of soundmapping techniques. The positive responses suggest that the activity was well-received and has potential for continued use in music education.

5.3.3 Summary

The data collected through this comprehensive questionnaire provided a promising foundation for evaluating the pedagogical impacts of the soundmapping activity, offering valuable insights into the student's creative processes, collaborative efforts, and enhanced auditory awareness.

While the questionnaire provided valuable insights into the students' experiences and perceptions of the soundmapping activity, several areas for improvement were identified that can enhance future research. Allowing students more time to reflect on their experiences before completing the questionnaire could yield deeper and more considered responses, capturing the longer-term impacts of the activity. Encouraging more detailed responses in the open-ended sections can be achieved through prompts and emphasizing the anonymity and non-evaluative aspects of their feedback, promoting honesty and depth. Expanding the study with a broader research opportunity to include a larger and more diverse sample across multiple schools could enhance the generalizability of the findings. A longitudinal study design, with follow-up assessments over time, could provide insights into the lasting effects of soundmapping on creative music thinking, environmental awareness, and collaborative skills. These improvements, which I plan to explore further in my PhD studies, are possible points to expand the research methodology and contribute to the development of effective pedagogical practices in music and environmental-experiential education.

5.4 Observation Notes

In addition to the questionnaire, detailed observation notes aim to contribute to the relevant insights. These notes, taken by the primary researcher, provide a rich, qualitative layer of data. The observations focused on several key aspects of the activity: student engagement, interaction within groups, creativity in sound identification and mapping, and the overall dynamics of the session, which might not be fully reflected in the questionnaire responses.

1. Initial Presentation: After a short initial technical issue, a presentation of the concept and uses of soundmap was given successfully, and students seemed interested in this new experience. The music teacher's translation of the instructions into Czech was crucial, ensuring that all students fully understood the task.

2. Soundwalk at the Mall: In the beginning, students were rather shy and hesitant when instructed to start soundmapping in the mall. After repeating the instructions a couple of times and ensuring everyone understood, the students quickly dispersed with excitement to explore this outdoor activity.

- Engagement Variability: Some students stayed with their friends, forming small groups and comparing their observations, while others preferred to explore alone. This variation in engagement styles highlighted the flexibility of the activity in accommodating different social preferences.
- Transcribing Methods: Students employed diverse methods to document their observations. Some wrote words, others drew pictures of the sound sources, a few used both techniques, and some students visualized the sounds through drawings that depicted the perceived movement or intensity

of the sounds. This creativity in transcribing methods demonstrated the students' ability to engage with the task in personally meaningful ways.

- Mobility and Scope: While some students remained stationary, focusing on a specific area, others moved around the entire place to capture a broader range of sounds. This mix of stationary and mobile soundmapping approaches reflected the adaptability of the activity. The primary researcher observed that even though a traditional soundmap indicates a stationary center, the moveable center approach allowed for a richer collection of sounds.
- Encouragement and Adaptation: When students struggled or had empty papers, the primary researcher encouraged them by pointing out specific sounds around them. This encouragement was effective, as students quickly began to fill their papers with detailed observations.

3. Reassembly and Group Discussions at the Mall: It took the group slightly longer than expected to reassemble, indicating their deep engagement with the soundmapping task. Some students didn’t leave their pens until they took a note of that one last sound. Once gathered, the transition to group discussions about musical ideas was seamless.

- Positive Atmosphere: As soon as students were asked to form groups and discuss their findings, almost all of them started smiling and talking lively. They enjoyed sharing their unique and sometimes quirky sound-based musical ideas.
- Immediate Creativity: Some students quickly composed catchy tunes with lyrics, demonstrating an impressive ability to generate and agree on musical ideas. It was fascinating to observe how easily some groups could create and take ownership of a new song, continuously singing it throughout the remaining activities.

4. Soundwalk at the Nature Park: The activity at the second location, a nature park, started much faster and progressed more smoothly as students were now familiar with the process.

- Faster and More Relaxed: Students started their soundmapping tasks much faster and with more confidence. The larger, more open space of the park seemed to encourage a quieter, more reflective engagement initially, but this soon gave way to more enthusiastic interactions as students felt less constrained by the presence of "outsiders."
- Interaction Dynamics: The nature park's environment fostered a different dynamic compared to the mall. Students were more interactive, possibly due to the lack of external observers. This shift was evident in the increased vocal interactions and collaborative spirit.

5. Group Performance Preparation and Execution: Upon returning to the school, students were instructed to plan their musical compositions based on their soundmaps.

- Focused Planning: The students were deeply focused and whispered among themselves while planning their compositions. This phase was marked by intense concentration as groups worked collaboratively to integrate their transcribed sounds into cohesive musical pieces.
- Variety in Compositions: The resulting compositions were diverse, showcasing a wide range of creativity. Each group presented a unique piece, reflecting their individual approaches to integrating environmental sounds into music.
- Performance and Feedback: Despite initial shyness, most students were excited to share their compositions. The performances were met with applause, and the primary researcher provided positive feedback, highlighting the complexity and creativity of their work. Unfortunately, due to time limitations, only four groups were able to perform, with one group being offered to submit an audio recording later, though this was not received.

6. Overall Impressions and Student Feedback: Throughout the session, the majority of students appeared highly engaged and enthusiastic. The final phase of the activity, where students performed their compositions, was particularly telling.

- Positive Reception: Students thanked the primary researcher and expressed their enjoyment of the activity. Throughout the procedure, the majority of students were cheerful and positive, indicating a high level of satisfaction and positive emotional response to the experience.
- Observational Insights: The observations indicated that the hands-on, exploratory nature of the soundmapping activity, combined with the collaborative music-making process, successfully engaged students and supported their creative development. The positive atmosphere, from initial curiosity to final performances, highlighted the effectiveness of the experiential learning approach in fostering both individual and group creativity.

These detailed observation notes, coupled with the quantitative and qualitative data from the questionnaire, provide a comprehensive understanding of the educational impact of the soundmapping activity. They underscore the value of integrating environmental awareness and creative collaboration into music education, offering rich insights into how such activities can enhance student engagement and learning outcomes.

5.5 Content of Compositions

This section evaluates the use of environmental sounds in the students' music compositions, as well as the basic musical structures. Subjects are considered both composer and performer because even though the majority of compositions seemed to have been performed according to the plan, there were a couple of moments of disagreement during performances. This suggests the possible need for a nuanced distinction between the performed music and the composed music. Each composer-performer team is called a "group," as it was a collaborative subject that created the end product of the music compositions' performance. Each piece is called a "composition performance," which is numbered according to the group performing it. In other words,

Composition Performance 1 is performed by Group 1, and so forth. This section provides the environmental inspiration behind the sounds of the compositions based on the groups' post-performance disclosure.

5.5.1 Composition Performance 1

Overview: Three female students. Group 1's composition is an improvised musical piece, using self-chosen instruments to imitate environmental sounds without a concrete rhythm or verbal components. The focus is on a free flow of sound, and this reflects the organic nature of their soundwalk experiences.

Instrumentation and Sound Imitation:

- A minor third interval (D#4 - F#4) is played with a kalimba in a continuous moderate meter. The choice of a minor third interval adds a harmonious quality to the piece.
- A student used a rice stick to imitate the sound of a plastic shopping bag, contributing a textural sound that adds a realistic element to the environmental sounds.
- They added a vocalization of a "shhh" sound to resemble the sound of the wind. This provided a soft, soothing auditory element that blends seamlessly with the other sounds.

Musical Structure: The composition rejects a defined structure, focusing instead on the spontaneity of production sounds as a musical experience. This approach emphasizes the fluid and adaptive nature of environmental sounds.

5.5.2 Composition Performance 2

Overview: Four female students. Group 2 created a verbal music piece with a catchy tune, relying solely on bodily sounds and vocal imitation. The composition is rhythmic and structured, integrating environmental sounds predominantly verbally.

Rhythm and Tempo:

4/4 Tempo: Tempo was established by hand clapping on their legs, one hit per beat, creating a steady and engaging rhythmic foundation.

Melodic Line: It consisted of a repeating sequence (F4 F4 C4-C4-C4 D4 C4), incorporating eighth notes, quarter notes, and sixteenth notes, which add rhythmic variety and interest.

Rhythmical Variety: The composition included varying but clear combinations of quarter, eighth, and sixteenth notes, attracting further engagement.

Sound Imitation and Verbal Components:

Environmental Sounds: Integrated through singing phrases like “cink cink” (cashier sound), “hvizd hvizd” (receipt printing), “načte si kreditní kartu, proč ne?” (store announcement), and “cvak!” (bird sound).

Complimentary Effects: In between various environmental sound imitations, they included the verbal phrase “Tra-la-la La-la”, adding a layer of cheerful narrative to the composition.

Musical Structure: The piece combines a repeating catchy melodic line with recitative-like verbal sections. This way, it creates a relatable, dynamic, and easily memorable musical experience.

5.5.3 Composition Performance 3

Overview: Five male students. Group 3's composition focuses on percussion and rhythmic sound imitations, creating a rich groove inspired by environmental vibrations. By emphasizing rhythm

over melody, this composition reflects the focus on movement and pulse of the auditory environment.

Rhythm and Tempo:

- 4/4 Tempo: The song spans 21 measures, with a strong groove emphasized by the repetition of rhythmic elements.
- Core Elements include the “tü düt” singing, chewing gum sound, and bongo drums, one in every first and third beat. This compositional choice established a consistent rhythmic base.

Sound Imitation and Layering:

Environmental Sounds: Layered to build a complex soundscape, including sounds like:

- In the beginning, a high male voice singing a minor interval (D#4 and F#4) with the verbal pattern “Tü-düt” starts the composition performance to mimic machine sounds in the mall. This is followed by gradual additions of different sounds, layering the rhythmical core.
- Every two beats, starting from the second measure, a sound made of ripping part of a paper joins to replicate shopping receipt sounds.
- From the fourth measure onward, a new vocal sound is introduced again every two beats to imitate the sound of chewing heard in the mall.
- Recitative Singing: Phrases like “děkujeme za váš nákup” and “načtěte-si čárový kod” remain constant in their pattern. Both are performed as one word per beat, further strengthening the strong groove.
- For two measures between the 9^{th} and 10^{th}, a buzzing vocal joins the base, mimicking a vacuum.

- High register vocal singing a rapid momentary “beep-beep”, like a barcode scanner.
- The last new sound is introduced towards the end, the sound of a shopping cart, between the 17th and 19th measure, adding to the ambient aspect of the music.

Musical Structure: The composition builds up layers of sound, introducing new elements intermittently before returning to core elements, creating a sense of progression and climax. The piece concludes by repeating the main rhythmic motifs, reinforcing the strong groove established throughout the performance.

5.5.4 Overall Evaluation

Each group's composition offers a unique interpretation of their soundmapping experience, reflecting their distinct approaches to harmonical, rhythmical, and instrumental elements. Group 1’s free-flowing improvisation, Group 2’s structured verbal music, and Group 3’s rhythm-focused piece collectively showcase the diverse ways environmental sounds can inspire musical expression.

Chapter 6: Conclusion

This research demonstrates the significant potential of soundmapping as an engaging educational tool in music education. By utilizing the practical principles of Acoustic Ecology and Ecomusicology and integrating them with Experiential Learning Theory (ELT), this study shows how environmental sounds can inspire students to create musical compositions. It was achieved by presenting a successful application of sound mapping as a compositional tool in a middle school music lesson in Prague, Czechia.

The soundmapping method employed involved students in a multi-faceted learning process. They participated in soundwalks to gather diverse auditory data. They then created visual representations of these sounds, i.e., soundmapping, and engaged in collaborative brainstorming to conceptualize and perform musical pieces. This method enhanced their auditory awareness and fostered critical thinking, creativity, and collaboration.

The practical implementation of soundmapping in classrooms was successful. Students were, in fact, able to create music compositions inspired by their soundmaps and enjoyed the collaborative process. They reported improvements in their creative thinking and understanding of musical imagination tools. These results highlight the method's effectiveness in enhancing student engagement and creativity.

This thesis contributes new insights to the field of music education. It demonstrates how environmental sounds can be transformed into musical compositions through the Ecomusicological method, soundmapping. The study expands the scope of ELT in music education by incorporating outdoor and real-world settings that focus on inspirational engagement. Students interacted directly with their auditory environment. Through the connections between music,

culture, and nature, this research highlights the potential of experiential learning to foster environmental interaction and creative engagement.

However, the presented research contains several limitations. The major limitation of the presented implementation of soundmapping in music education is timing. The participant school lacked the time and resources to support multiple repetitive outdoor activities required for a thorough soundmapping project. It would be beneficial to have several sessions with students to provide them with more time for exploration, reflection, and composition preparation. Another significant challenge is always the subjective nature of assessing creative thinking and inspiration. It would be beneficial to conduct further flexible assessment methods that would expand the data analysis.

Future research could further explore the broader applications of soundmapping in various educational contexts. It could also investigate the long-term impact on students' musical and cognitive development. Additionally, traditional soundmapping methods could be integrated with digital technologies to provide more versatile learning experiences that enhance the overall educational impact.

In conclusion, soundmapping offers a compelling and effective approach to music education. It engages students with their auditory environment and fosters critical and creative thinking, as well as collaboration. This research underscores the importance of innovative and interdisciplinary approaches in education. It encourages educators to incorporate experiential learning activities that stimulate auditory awareness and environmental inspiration. Through soundmapping, students not only learn about music and sound but also develop a more mindful connection to their environment. That enhances their overall educational experience.

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Appendix

Soundmap questionnaire:

Sound mapping Questionnaire – April 2024

1. What is your gender? Female [ ] Male [ ]

2. Before this activity, were you familiar with sound mapping?
Very Familiar [ ] Familiar[ ] Not Familiar at all [ ]

3. How easy did you find identifying and mapping sounds in the park?
Very easy [ ] Somewhat easy [ ] Neutral [ ]
Somewhat difficult [ ] Very difficult [ ]
Why? (Optional): _____

4. Compare the variety of sounds between the shopping mall and the park.
More in shopping mall [ ] More in park [ ]
About the same [ ]

5. What was the most surprising sound you mapped?
Sound: _____
Why was it surprising?: _____

6. Has sound mapping changed how you listen to your surroundings?
Greatly changed [ ] Slightly changed [ ]
No change [ ]

7. What challenges did you face while creating your sound map? (you can tick multiple answers)
Finding sounds [ ] Taking note of sounds [ ]
Distinguishing sounds [ ] Other: _____

8. How did sound maps help you with musical ideas? (you can choose more than one option)
Melody [ ] Rhythm [ ] Timbre(Tone color) [ ]
Harmony [ ] Dynamics [ ] Texture [ ]
Not at all [ ]
Explain (Optional): _____

9. Did specific sounds inspire parts of your music?
Yes [ ] No [ ]
If yes, which sounds are they?: _____

10. Did working with classmates influence your creative process?
Positively [ ] Negatively [ ] No effect [ ]

11. You used sounds from the environment to create music. How did this experience affect your attention to everyday sounds?
Increased a lot [ ] Increased a little [ ]
No effect [ ]

12. Had you considered using environmental sounds in music before this?
Yes [ ] No [ ]

13. What did you enjoy most about creating music from sound maps?
New sounds [ ] Creative challenge [ ] Working with others [ ] Other: _____

14. What was challenging about using sound map for creating music?
Identifying sounds [ ] Translating sounds [ ]
Nothing [ ] Other: _____

15. How has this experience supported your creativity?
Supported a lot [ ] Supported a little [ ]
No effect [ ]

16. Would you use sound mapping in future projects?
Yes [ ] No [ ]
Why or why not?: _____