

Evaluation of outdoor environment in preschools using the soundscape approach

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A lot of education in Swedish preschool occurs outdoor, which makes having good sound environment important for the children and the teachers. The denser the cities get the more difficult it might become to build preschools with good sound environment. Therefore, it might be reasonable to look for other less conventional solutions, such as soundscape. Soundscape is an approach which relies on perception of the sound environment from human experience. With the recent standardization, soundscape method could prove to be a good complementary to current standardized approach.

The purpose of this Master thesis is to investigate the current guidelines for outdoor measurement in preschools, introduce new methods used in previous soundscape studies and the newly published ISO 12913-2:2018 and 12913-2:2019. Questions to be answered are what other parameters could be used together with the standard parameters, how a soundscape study could be used together with standard measurement and if there is any correlation between the subjective perception and the measured data.



This thesis will aim to:

- Examine how a soundscape study can improve the outdoor sound environment in preschools.

- Look to find correlation between measurements and the subjective experience of the participants.
- Discuss current limitations and suggest improvements for future projects and studies.

Results Two-dimensional model and a regression model was created using the measurement data and questionnaire answers. The two-dimensional model showed that most values were found loading on the *Pleasant* component. The position of the coordinate suggests that that variability of sound might affect the perception of the environment. Higher variability would make the sound environment more exciting, while less variability would make it calmer.

The statistical analysis showed little correlation. The highest correlation was found for the parameter max loudness N_{\max} and the perception of natural sounds. This correlation was used to create a regression model to help predict what levels of N_{\max} in sones would be needed to generate higher score in natural sounds.

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