



# Connectedness with Nature and Implications for Science Learning

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## Background

Connectedness with Nature (CWN) is described as the subjective sense of connection people have with the natural environment. Individuals with high connectedness with nature see themselves as part of, not separate from nature. Classroom observation, anecdotal evidence, and achievement data contributed to my hypothesis that self-perceived connectedness with nature influences learning and possibly the meaning students take away from science instruction. The purpose of this study was to investigate connectedness with nature and its implications for science learning.

## Research Questions



How does self-perceived connectedness with nature impact science learning in high school students?



What variables influence connectedness with nature in high school students?



Can connectedness with nature be enhanced through participation in a series of place-based learning modules?

## Sample

Martin Luther King Academic Magnet is situated in downtown Nashville, Tennessee. MLK's student body is diverse, representing over 70 different countries of origin. Sixty-one 12<sup>th</sup> grade Environmental Science students were recruited to participate in this study.

## Methodology

The Nature Relatedness Scale was employed to assess connectedness with nature. Other data sources included student interview, student achievement from prior science courses, and place-based learning tasks. Tree canopy assessments were conducted to establish relationships between greenspace near a student's residence and nature relatedness scores.

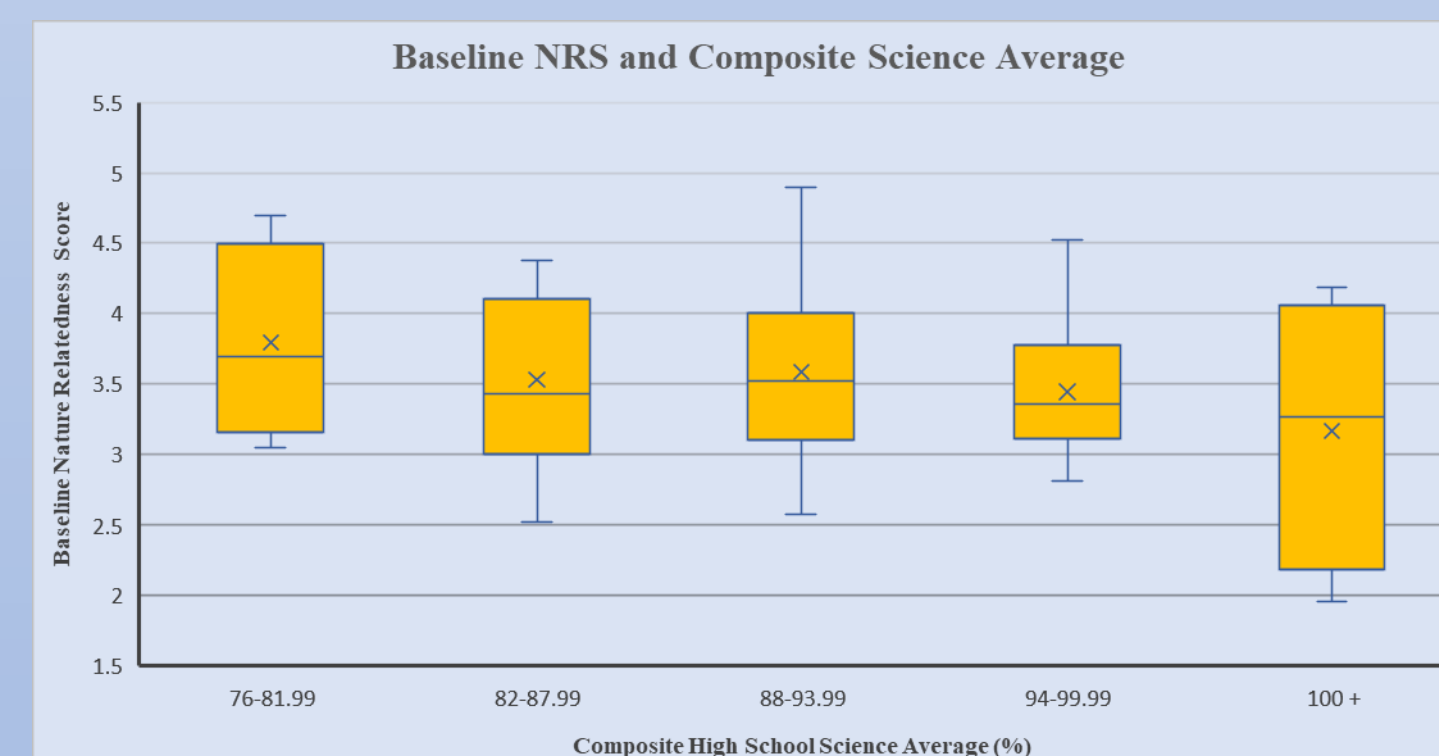


Figure 1. Box and whisker plot comparing nature relatedness and high school science achievement (N=61). The plot demonstrates a weak negative correlation ( $r=-.22$ ) between the two variables. An average NRS score of 3.23 was observed among the top ten science achievers in the study.

## Treatment

Place-based Education (PBE) leverages local environment and local phenomena to teach science concepts. Subjects participated in three place-based learning modules during this investigation.

## Data and Analysis

Three quantitative and two qualitative data sources were triangulated to address each of the three research questions in this study.

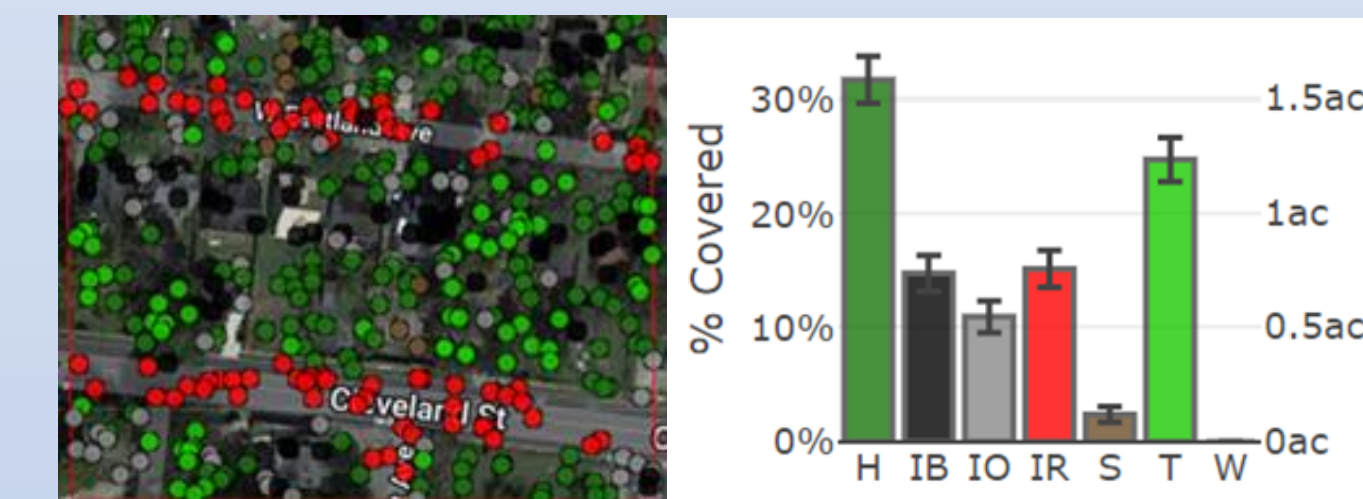


Figure 2. Ground cover classification in an urban neighborhood. The web-based tool i-Tree Canopy was employed in conducting greenspace assessments in 5-acre plots surrounding each subject's residence.

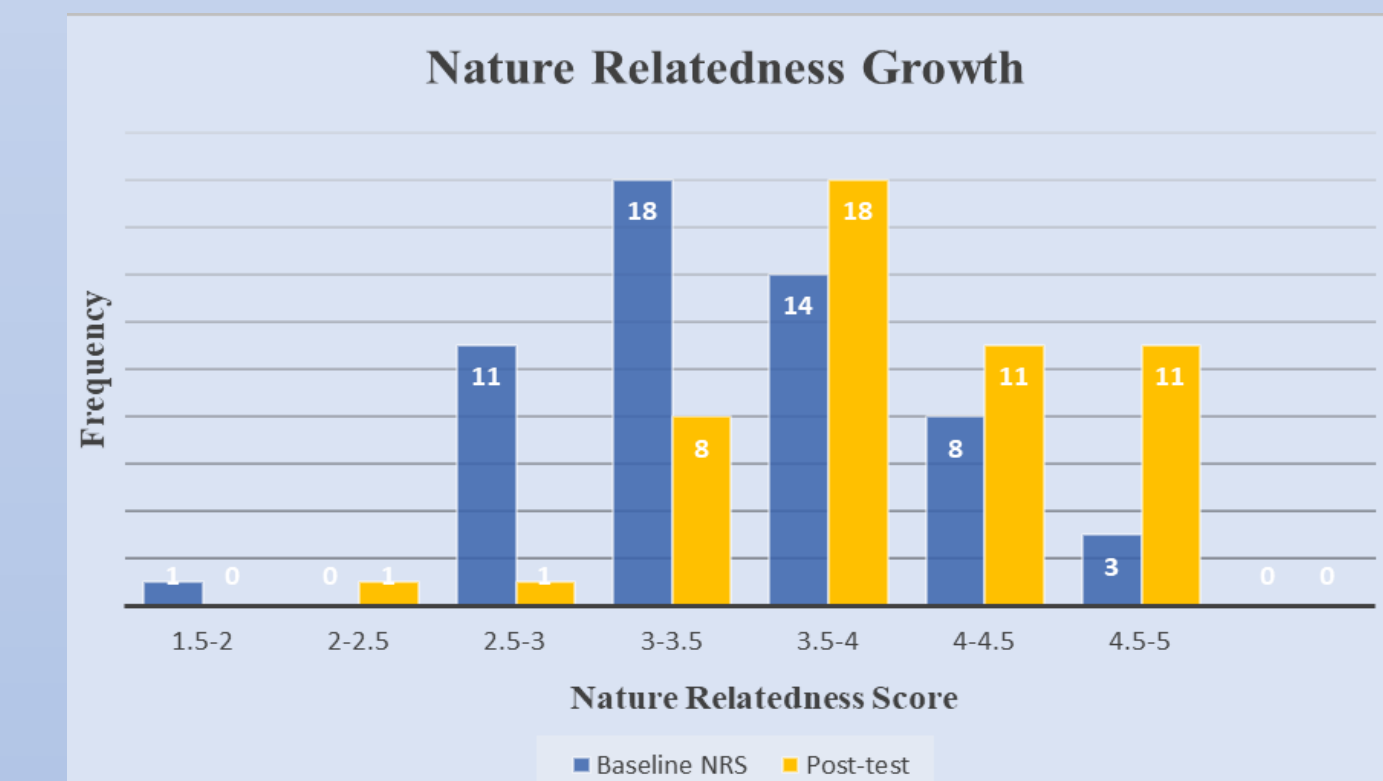


Figure 3. Pre and post assessment frequency distribution, Nature Relatedness Scale (N=56). The survey was administered as a baseline and again at the conclusion of each of three place-based learning modules. Students demonstrated an average normalized growth of .37 over the course of the investigation.

## Conclusions

Connectedness with nature (CWN) was not associated with science achievement in this sample but results suggest students with high NRS scores may differ from their peers in what they bring to and take from the science classroom. CWN seems to be influenced by experiences in nature and greenspace in the at-home environment though the latter requires more study to confirm. NRS scores were effectively enhanced in this Action Research utilizing place-based learning techniques.