

Study of Nature-Based Interventions Designed to Improve Student Performance on their Standardized Testing

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Abstract: *Distance learning has increased stressors upon educators, students, and families alike and has increased academic inequities. Study after study has shown that exploring the natural world can reduce stress, increase focus, boost creativity and performance, and improve well-being. For example, the book *The Nature Fix: Why Nature Makes Us Happier, Healthier, and More Creative* by Florence Williams documents many of the physical and mental health benefits of exposure to the natural world. How can this knowledge be used to help students increase performance and reduce stress associated with standardized testing?*

Statement of the Research Problem

Can introducing nature interventions into the review process for and administration of standardized testing improve student scores and decrease student stress associated with the testing?

Literature Review

Studies, primarily among adult populations, have found that exposure to natural scents, sounds, and tastes, and walking outdoors can increase focus, reduce stress, and improve performance on tests requiring sustained attention. Anecdotal evidence suggests that these natural elements will have a similar effect upon students in k-12 settings. To date, no

large-sample study has evaluated the effects of these nature interventions upon student performance on standardized tests. This study in over 100 school test administration settings will contribute to the scholarship in this area. Moreover, the study results can help school administrators make evidence-based decisions about interventions designed to improve student performance on standardized tests.

Methodology

This study is being conducted using quasi-experimental methods. Data is collected using surveys that are distributed via Qualtrics survey software and completed by teachers and school librarians. Surveys are anonymous. No data collected will reveal identities. Interviews will be protected by encryption and stored via password in Zoom storage. Only the Administrators will have direct access to them. Survey results are analyzed and triangulated for clarity and validation. Anonymized standardized test data is compared to determine significance of the treatment. Reporting of results and/or findings will be in a publication.

Preliminary Findings & Discussion

The study is currently in its recruitment stage and we are seeking over 100 schools from throughout the world to participate. By the date of the conference, we expect to be able to report preliminary results. Already, we have attracted broad interest from schools seeking student-friendly and nature-centered ways to improve the testing experience for students with the potential to significantly increase student performance on their standardized testing.

The nature interventions were selected based on data showing an increase in focus and a reduction of stress associated with introducing smells and sounds from nature, making available peppermint gum to students, and taking them on a 15-minute walk within 30 minutes of the beginning of testing administration. We look forward to sharing our findings.

Implications and Conclusions

If our results are consistent with studies in other contexts, we believe that they will provide an evidence-based way for educators to improve student experience and increase student performance on their standardized tests. The study can also provide inspiration for other researchers to explore other nature-centered interventions, to isolate the effects of each intervention, and to determine whether some nature-based interventions are best suited for individual student populations.

References

- Ginns, P, Kim, T, Zervos, E. (2019). Chewing gum while studying: Effects on alertness and test performance. *Appl Cognit Psychol.* 33, 214– 224.
- Luo J, Wang M, Chen L. (2021). The Effects of Using a Nature-Sound Mobile Application on Psychological Well-Being and Cognitive Performance Among University Students. *Front Psychol.* Nov 24;12:699908. doi: 10.3389/fpsyg.2021.699908. PMID: 34899458; PMCID: PMC8651610.
- Varney, E. and Buckle, J, Effect of Inhaled Essential Oils on Mental Exhaustion and Moderate Burnout: A Small Pilot Study. *The Journal of Alternative and Complementary Medicine.* Jan 2013.69-1.
- Wells, N.M. “At Home with Nature: Effects of ‘Greenness’ on Children’s Cognitive Functioning.” *Environment and Behavior.* Vol. 32, No. 6, 775-795.
- Williams, F. (2018). *The nature fix: Why nature makes us happier, healthier, and more creative.* W. W. Norton & Company.

Biographies

Jo Watson Hackl is the best-selling and award-winning author of *Smack Dab in the Middle of Maybe*, an Amazon Teacher's Pick. She also founded Outdoorsity.org, a free nature resource.

Elizabeth Gross is an Assistant Professor of Library Science & Technology in the College of Education at Sam Houston State University. She is also the Editor of *The Journal of Universality of Global Education Issues*.