Academic performance and Therapeutic Breathing

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Abstract

This paper explores using breathing techniques to boost the academic performance of students and describes how teachers can foster the technique in their classrooms. The innovative study examines the differential impact of therapeutic breathing exercises, called pranayama, on students’ academic performance. The paper introduces approaches to therapeutic breathing exercises as an alternative to improve school performance, as well as the self-regulatory behavior, which is known to correlate with academic performance. The intervention consisted of two breathing exercises, (1) deep breathing, and (2) alternate nostril breathing. It is a quantitative study spanning over a year with about 100 third graders was conducted using daily breathing exercises to investigate the impact of pranayama on academic performance. Significant cumulative gain-scores were found for students who practiced the approach.
Popularity of a belief is not the same thing as the validity of the belief.
Research Question

• What’s the impact of breathing techniques on students’ academic performance?
Background Information

• It is a recognized Jr. High School (Nursery-8th grade). The medium of instruction is English. The average class size is 50 students per class. Students come from lower socioeconomic backgrounds. The average salary per month is 3000-5000 Rs.

• Classes are split into two sections.

• The school time is 7:30 am to 1:40 pm.

• There is classroom teacher and math and computer teacher. They follow NCERT curriculum.
Conceptual Framework

- Deep Breathing
- Alternate Nostril Breathing
Children practicing alternate-nostril breathing pranayama
Literature Review

• Deep breathing and alternate nostril breathing, purport to provide the therapeutic benefits affecting memory and brain cells (Telles, et al 2007).

• More oxygen and better circulation, affect the central and autonomic nervous systems (Brosnan, 1982; Lalvani, 1999)

• In a 2005 meta-review of analysis of several studies, Richard Brown, MD and Patricia Gerbarg, MD, reported that yogic deep breathing was extremely effective in addressing depression, anxiety and stress related disorders.
Literature Review

• Pranayama as a promising intervention for cognitive, social, emotional, behavioral, and academic difficulties (Nardo & Reynolds, 2002; Peck, Kehle, Bray, & Theodore, 2005)

• Pranayama promotes self-control, attention and concentration, self-efficacy, body awareness, and stress reduction (Nardo & Reynolds, 2002)
Literature Review

• Yoga programs in elementary schools that incorporate balancing, bending, and stretching exercises have been a growing area of research (Berger, Silver, & Stein, 2009).

• Mind-body techniques teach children to improve their attention skills, which can help their performance in school (Steiner, et al. 2013, p. 816).

• There is empirical evidence for the efficacy of breathing exercises on behavior modification (Peck, et al. 2005, Steiner, et al. 2013).
Methodology

Experimental Research Design, grade levels were randomly assigned.

Independent Variable – Therapeutic Breathing Exercise

Dependent Variables – Unit Test Scores (Math, English and Hindi)

Measures – Unit test scores

The effectiveness of the intervention (independent variable) on unit test score differences (the dependent variable) was evaluated by ANCOVA with the covariate of English pretest scores (due to multiple comparisons, between Hindi, English, Math and Cumulative gains).
# Demographic Information

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<td>N= 51</td>
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Findings

Average Gain Point Improvement between Experimental and Control Groups

1 = Experimental Group
2 = Control Group
## Findings

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<th>df</th>
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*a. R Squared = .237 (Adjusted R Squared = .220)*
Findings

• Students from treatment group showed increased attention span and attendance rates, stayed on task and paid greater attention to teacher directions with minimal referrals for behavioral issues.

• Teachers noted a general enthusiasm among students when they practiced pranayama.
Limitations of the Study

- The study was conducted in one school, thus interpretation of the results of this study should be made with caution and cannot be generalized.
Implications

• Future research should include replication with larger number of students.

• Studies with a longer term follow-up would provide more data regarding the sustainability of the effects of the intervention.
Dr. Abha Gupta, currently an Associate Professor of Language and Literacy Education at Old Dominion University, Norfolk, Virginia, has been the past director of ODU’s Reading Center and the federally funded America Reads Program. Her main research interests center on language and literacy development. Dr. Gupta received a doctorate degree from the University of Arizona in Tucson. She has numerous publications in literacy education and has made many presentations at international, national, state and local conferences. She is an educational consultant with Educational Testing Service (ETS) and has received research grants at corporate, federal and state levels. Dr. Gupta is a member of the International Reading Association’s Title One Reading Committee.

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References


Absence of opportunity to learn should not be interpreted as absence of ability to learn.