



# GETTING INSIDE THE OUTSIDE

THE CASE(STUDY) FOR OUTDOOR LEARNING





What do we know about the connection between children and the outdoors?

# PART 1: THE NEW CHALLENGES OF CHILDHOOD

MAKING THE CASE FOR OUTDOOR LEARNING

THE NEW CHALLENGES OF CHILDHOOD:

# The Child, School & Community





THE NEW CHALLENGES OF CHILDHOOD:

# The Child, School & Community

## A Community Hub

As shown below, a community school functions as the hub of its community. Partners such as unions, faith-based organizations, community-based organizations, businesses, and higher education institutions collaborate to ensure that both academic and nonacademic needs are met for students and families so that students can focus on learning and educators can focus on teaching.



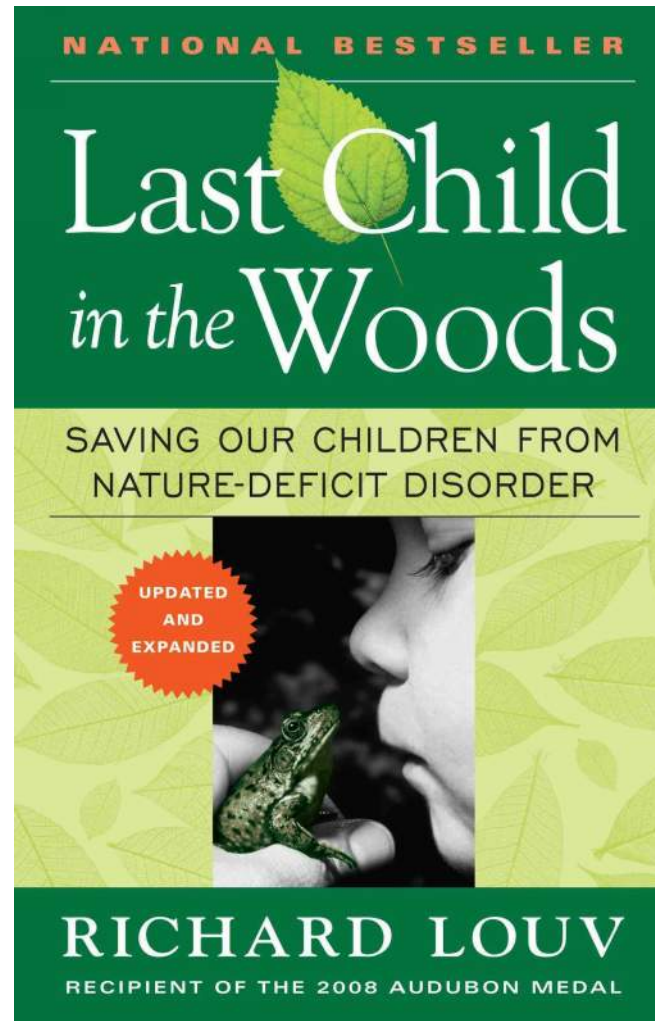
DANIEL BAXTER, IMAGE ADAPTED WITH PERMISSION FROM  
FAMILY LEAGUE OF BALTIMORE INFOGRAPHIC

THE NEW CHALLENGES OF CHILDHOOD:

# "Nature Deficit Disorder"

*"Time in nature is not leisure time; it's an essential investment in our children's health." - Richard Louv*

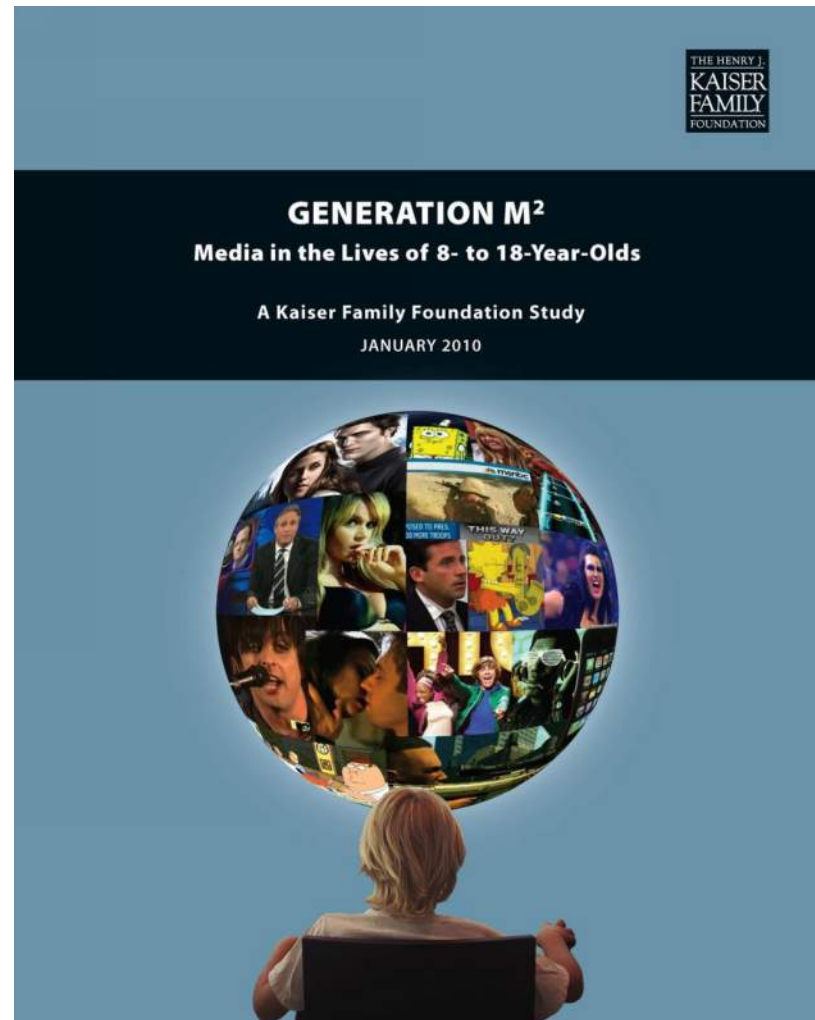
- ❑ Children spend less meaningful time outdoors
- ❑ This affects their performance and their health in known and unknown ways
- ❑ This affects our environmental heritage



THE NEW CHALLENGES OF CHILDHOOD:

# Directed Attention Fatigue

- ❑ Executive functioning is the sweet spot of learning
- ❑ There is a relationship between executive functioning and directed attention
- ❑ There is a connection between increases in electronic media use and decreases in directed attention
- ❑ Media use in children is on the rise

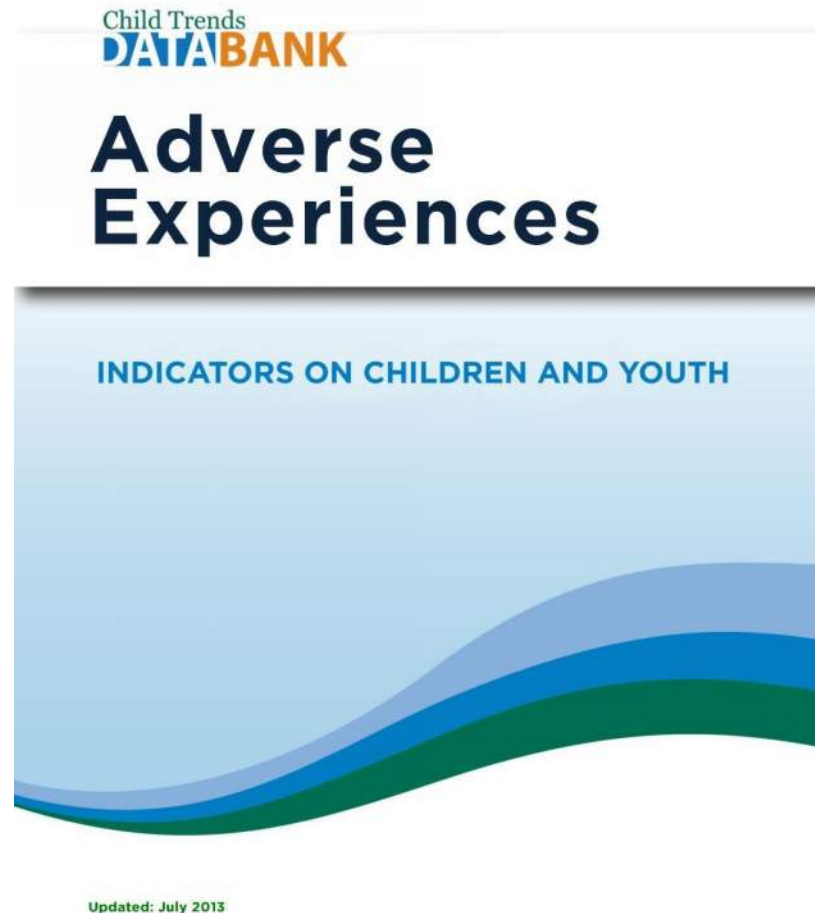




## THE NEW CHALLENGES OF CHILDHOOD:

# Stress

- ❑ There are three generally accepted levels of stress
- ❑ Some stress is good for performance
- ❑ “Toxic” Stress actually interferes with developing brain architecture and can damage children’s ability to learn
- ❑ 1 in 8 children have experienced 3 or more adverse life experiences associated with toxic stress



# Stress

- ❑ In addition, there are some populations much more prone to toxic stress
- ❑ Military-connected students and lower socioeconomic class have higher rates of adverse experiences
- ❑ Stress is not only for the deployed family member, but also adapting to new roles at deployment, leave or redeployment

## TECHNICAL REPORT

### Views from the Homefront

#### The Experiences of Youth and Spouses from Military Families

Anita Chandra • Sandraluz Lara-Cinisomo • Lisa H. Jaycox • Terri Tanielian  
Bing Han • Rachel M. Burns • Teague Ruder

Sponsored by the National Military Family Association, with funding from the Robertson Foundation and the Sierra Club Foundation

# Obesity & Physical Activity

- ❑ Obesity has tripled in the last 30 years
- ❑ 1 in 3 american children is overweight or obese
- ❑ 50% of overweight children remain overweight as adults
- ❑ Poor diet and lack of physical activity is the second leading cause of deaths after tobacco use
- ❑ 21% of our healthcare dollars go to treating this disease

## ORIGINAL CONTRIBUTION

### Prevalence of Overweight and Obesity in the United States, 1999-2004

Cynthia L. Ogden, PhD  
Margaret D. Carroll, MSPH  
Lester R. Curtin, PhD  
Margaret A. McDowell, MPH, RD  
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Katherine M. Flegal, PhD

**O**BESITY CONTINUES TO BE A leading public health concern in the United States.<sup>1,2</sup> Between 1980 and 2002, obesity prevalence doubled in adults aged 20 years or older and overweight prevalence tripled in children and adolescents aged 6 to 19 years.<sup>1,3</sup> This article provides the most recent prevalence estimates of overweight and obesity based on national measurements of weight and height in 2003-2004 and compares these estimates with estimates from 1999-2000 and 2001-2002 to determine if the trend is continuing.

#### METHODS

Prevalence estimates of overweight and obesity were calculated using data from the National Health and Nutrition Examination Survey (NHANES), a complex, multistage probability sample of the US civilian, noninstitutionalized population.<sup>4</sup> Race/ethnicity was reported by survey participants. During a physical examination in a mobile examination center, height and weight were measured using standardized protocols and calibrated equipment. Body mass index (BMI) was calculated as weight in kilograms divided by the

**Context** The prevalence of overweight in children and adolescents and obesity in adults in the United States has increased over several decades.

**Objective** To provide current estimates of the prevalence and trends of overweight in children and adolescents and obesity in adults.

**Design, Setting, and Participants** Analysis of height and weight measurements from 3958 children and adolescents aged 2 to 19 years and 4431 adults aged 20 years or older obtained in 2003-2004 as part of the National Health and Nutrition Examination Survey (NHANES), a nationally representative sample of the US population. Data from the NHANES obtained in 1999-2000 and in 2001-2002 were compared with data from 2003-2004.

**Main Outcome Measures** Estimates of the prevalence of overweight in children and adolescents and obesity in adults. Overweight among children and adolescents was defined as at or above the 95th percentile of the sex-specific body mass index (BMI) for age growth charts. Obesity among adults was defined as a BMI of 30 or higher; extreme obesity was defined as a BMI of 40 or higher.

**Results** In 2003-2004, 17.1% of US children and adolescents were overweight and 32.2% of adults were obese. Tests for trend were significant for male and female children and adolescents, indicating an increase in the prevalence of overweight in female children and adolescents from 13.8% in 1999-2000 to 16.0% in 2003-2004 and an increase in the prevalence of overweight in male children and adolescents from 14.0% to 18.2%. Among men, the prevalence of obesity increased significantly between 1999-2000 (27.5%) and 2003-2004 (31.1%). Among women, no significant increase in obesity was observed between 1999-2000 (33.4%) and 2003-2004 (33.2%). The prevalence of extreme obesity (body mass index  $\geq 40$ ) in 2003-2004 was 2.8% in men and 6.9% in women. In 2003-2004, significant differences in obesity prevalence remained by race/ethnicity and by age. Approximately 30% of non-Hispanic white adults were obese as were 45.0% of non-Hispanic black adults and 36.8% of Mexican Americans. Among adults aged 20 to 39 years, 28.5% were obese while 36.8% of adults aged 40 to 59 years and 31.0% of those aged 60 years or older were obese in 2003-2004.

**Conclusions** The prevalence of overweight among children and adolescents and obesity among men increased significantly during the 6-year period from 1999 to 2004; among women, no overall increases in the prevalence of obesity were observed. These estimates were based on a 6-year period and suggest that the increases in body weight are continuing in men and in children and adolescents while they may be leveling off in women.

JAMA. 2006;295:1549-1555

www.jama.com

square of height in meters and was rounded to the nearest tenth.

The NHANES 2003-2004 overall response rate (of those originally selected for participation) was 68.6% (474/6916) for adults aged 20 years or older and 83.2% (4105/4932) for

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See also pp 1539 and 1577.

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WHAT DO ALL THESE NEW  
CHALLENGES HAVE IN COMMON?  
*GETTING KIDS OUTSIDE CAN HELP.*





# 1. "Nature Deficit Disorder"

## Green spaces and cognitive development in primary schoolchildren

Payam Dadvand<sup>a,b,c,1</sup>, Mark J. Nieuwenhuijsen<sup>a,b,c</sup>, Mikel Esnaola<sup>a,b,c</sup>, Joan Forns<sup>a,b,c,d</sup>, Xavier Basagaña<sup>a,b,c</sup>, Mar Alvarez-Pedrerol<sup>a,b,c</sup>, Ioar Rivas<sup>a,b,c,e</sup>, Mónica López-Vicente<sup>a,b,c</sup>, Montserrat De Castro Pascual<sup>a,b,c</sup>, Jason Su<sup>f</sup>, Michael Jerrett<sup>g</sup>, Xavier Querol<sup>e</sup>, and Jordi Sunyer<sup>a,b,c,h</sup>

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Edited by Susan Hanson, Clark University, Worcester, MA, and approved May 15, 2015 (received for review February 18, 2015)

Exposure to green space has been associated with better physical and mental health. Although this exposure could also influence cognitive development in children, available epidemiological evidence on such an impact is scarce. This study aimed to assess the association between exposure to green space and measures of cognitive development in primary schoolchildren. This study was based on 2,593 schoolchildren in the second to fourth grades (7–10 y) of 36 primary schools in Barcelona, Spain (2012–2013). Cognitive development was assessed as 12-mo change in developmental trajectory of working memory, superior working memory, and inattentiveness by using four repeated (every 3 mo) computerized cognitive tests for each outcome. We assessed exposure to green

activity are related to improved cognitive development (9). Outdoor surrounding greenness has also been reported to enrich microbial input from the environment (10), which may positively influence cognitive development (10). Through these pathways, exposure to green space, including outdoor surrounding greenness and proximity to green spaces, could influence cognitive development in children, yet the available population-based evidence on the association between such exposure and cognitive development in children remains scarce.

The brain develops steadily during prenatal and early postnatal periods, which are considered as the most vulnerable windows for effects of environmental exposures (11). However,

# 1. "Nature Deficit Disorder"

## *Green spaces and cognitive development in primary schoolchildren*

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Dadvand et al, May 15 2015

- 2,593 students - Barcelona, Spain (2012–2013)

### RESULTS

- ❑ Working memory increased by 22.8%
- ❑ Superior working memory increased by 15.2%
- ❑ Inattentiveness decreased by 18.9%

# 1. "Nature Deficit Disorder"

## Effect of Time Spent Outdoors at School on the Development of Myopia Among Children in ChinaA Randomized Clinical Trial

Mingguang He, MD, PhD<sup>1,2</sup>; Fan Xiang, MD, PhD<sup>1,3</sup>; Yangfa Zeng, MD<sup>1</sup>; Jincheng Mai, BSc<sup>4</sup>; Qianyun Chen, MSc<sup>1</sup>; Jian Zhang, MSc<sup>1</sup>; Wayne Smith, MD, PhD<sup>5</sup>; Kathryn Rose, PhD<sup>6,7</sup>; Ian G. Morgan, PhD<sup>1,8</sup>

[] Author Affiliations

**Importance** Myopia has reached epidemic levels in parts of East and Southeast Asia. However, there is no effective intervention to prevent the development of myopia.

**Objective** To assess the efficacy of increasing time spent outdoors at school in preventing incident myopia.

## THE NEW SOLUTIONS - OUTDOOR LEARNING

# 1. "Nature Deficit Disorder"

## *Effect of Time Spent Outdoors at School on the Development of Myopia Among Children in China - A Randomized Clinical Trial*

Mingguang He, MD, PhD et al, Sept 15 2015

- 1903 students - Guangzhou, China (2010-2013)

### RESULTS

- ❑ 9.1% decrease in incidents of myopia in the intervention group
- ❑ 10.7% decrease in spherical equivalent refraction over 3 years, a biological determiner of myopia.

## GETTING OUTSIDE HELPS MAKE KIDS HEALTHIER



## 2. Directed Attention Fatigue

University of Nebraska - Lincoln

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Faculty Publications, Department of Psychology

Psychology, Department of

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2015

### Impact of Urban Nature on Executive Functioning in Early and Middle Childhood

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## 2. Directed Attention Fatigue

### *Impact of Urban Nature on Executive Functioning in Early and Middle Childhood*

Schutte et al, Sept 2 2015

- ❑ Improved Attentional control (ability to use directed attention) after nature walk vs urban walk
- ❑ Improved Working Spatial Memory after nature walk vs urban walk

GETTING OUTSIDE HELPS CHILDREN FOCUS  
AND GET ENGAGED

## 3. Stress

*Journal of Environmental Psychology* (1991) 11, 201–230

### **STRESS RECOVERY DURING EXPOSURE TO NATURAL AND URBAN ENVIRONMENTS<sup>1</sup>**

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#### **Abstract**

Different conceptual perspectives converge to predict that if individuals are stressed, an encounter with most unthreatening natural environments will have a stress reducing or restorative influence, whereas many urban environments will hamper recuperation. Hypotheses regarding emotional, attentional and physiological aspects of stress reducing influences of nature are derived from a psycho-evolutionary theory. To investigate these hypotheses, 120 subjects first viewed a stressful movie, and then were exposed to color/sound videotapes of one of six different natural and urban settings. Data concerning stress recovery during the environmental presentations were obtained from self-ratings of affective states and a battery of physiological measures: heart period, muscle tension, skin conductance and pulse transit time, a non-invasive

## 3.Stress

### *Stress Recovery During Exposure to Natural and Urban environments*

Ulrich et al, 1991

- ❑ Participants were put in stressful situations and then shown a film with natural scenes.
- ❑ Their Physiological reactions were monitored through the entire process.
- ❑ Exposure to natural scenes increase their recovery rate from stress



## 3. Stress

### **AGGRESSION AND VIOLENCE IN THE INNER CITY** **Effects of Environment via Mental Fatigue**

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**FRANCES E. KUO** is an assistant professor at the University of Illinois, Urbana-Champaign. Her research examines effects of the environment on healthy human functioning in individuals, families, and communities.

**WILLIAM C. SULLIVAN** is an associate professor at the University of Illinois, Urbana-Champaign. His research focuses on the psychological and social benefits of urban nature and citizen participation in environmental decision making.

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**ABSTRACT:** S. Kaplan suggested that one outcome of mental fatigue may be an increased propensity for outbursts of anger and even violence. If so, contact with nature, which appears to mitigate mental fatigue, may reduce aggression and violence. This study investigated that possibility in a setting and population with relatively high rates of aggression: inner-city urban public housing residents. Levels of aggression were compared for 145 urban public housing residents randomly assigned to buildings with varying levels of nearby nature (trees and grass). Attentional func-


## 3.Stress

### *AGGRESSION AND VIOLENCE IN THE INNER CITY*

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Kuo et al, 2001

- ❑ Surveys were done of inner city Chicago Public Housing Residents
- ❑ Comparative analysis of the violence they experienced in their daily lives and the availability and quality of natural scenes around their housing
- ❑ Residents with access to natural views and settings experienced lower rates of violence



If we know Outdoor Learning is part of the solution, why don't we do it?



# BARRIERS TO THE OUTDOORS

1. Funding: *shortages of time & resources*
2. 'Attitudes'
3. The 'nature' of the space available (functionality)
4. External forces (weather)
5. Safety
6. Staff Development
7. Curricular Integration
8. More Work



# PART 2: GETTING INSIDE THE OUTSIDE

CASE STUDIES IN OUTDOOR LEARNING

# Some Models

LEARNING MODELS					
		PROJECT-BASED	EXPEDITIONARY	SERVICE	OTHERS...
SCHOOL TYPE	ELEMENTARY	FERGUSON ELEMENTARY YORK, PA			
	MIDDLE		PALI INSTITUTE RUNNING SPRINGS, CA		
	HIGH			HUDSON HIGH SCHOOL COLUMBUS, OH	

## GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

# Some Models

### Ferguson Elementary York, PA Problem-based Learning

Students engage in connected learning between classroom concepts and application of concepts in the real world



### Pali Institute Running Springs, CA Expeditionary Learning

Students build social confidence through exploring a conservation curriculum in the natural world



### Hudson High School Columbus, OH Service Learning

A partnership between the Ohio EPA and Hudson High School was the basis of the "Land Lab" where student engage in cleanup activities to improve the watershed





## GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

# Our Model





## GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

# Our Model



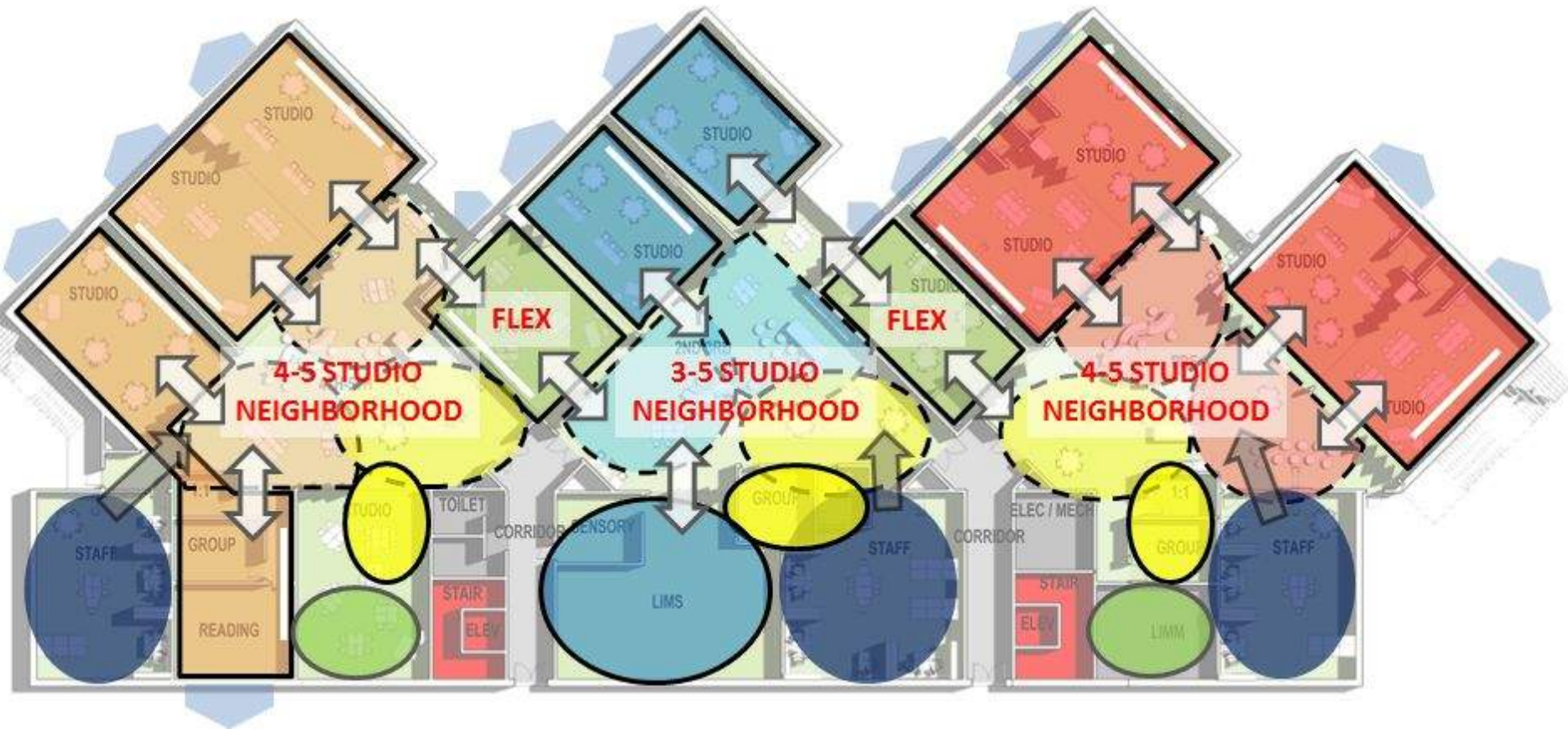






## GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

# Our Model





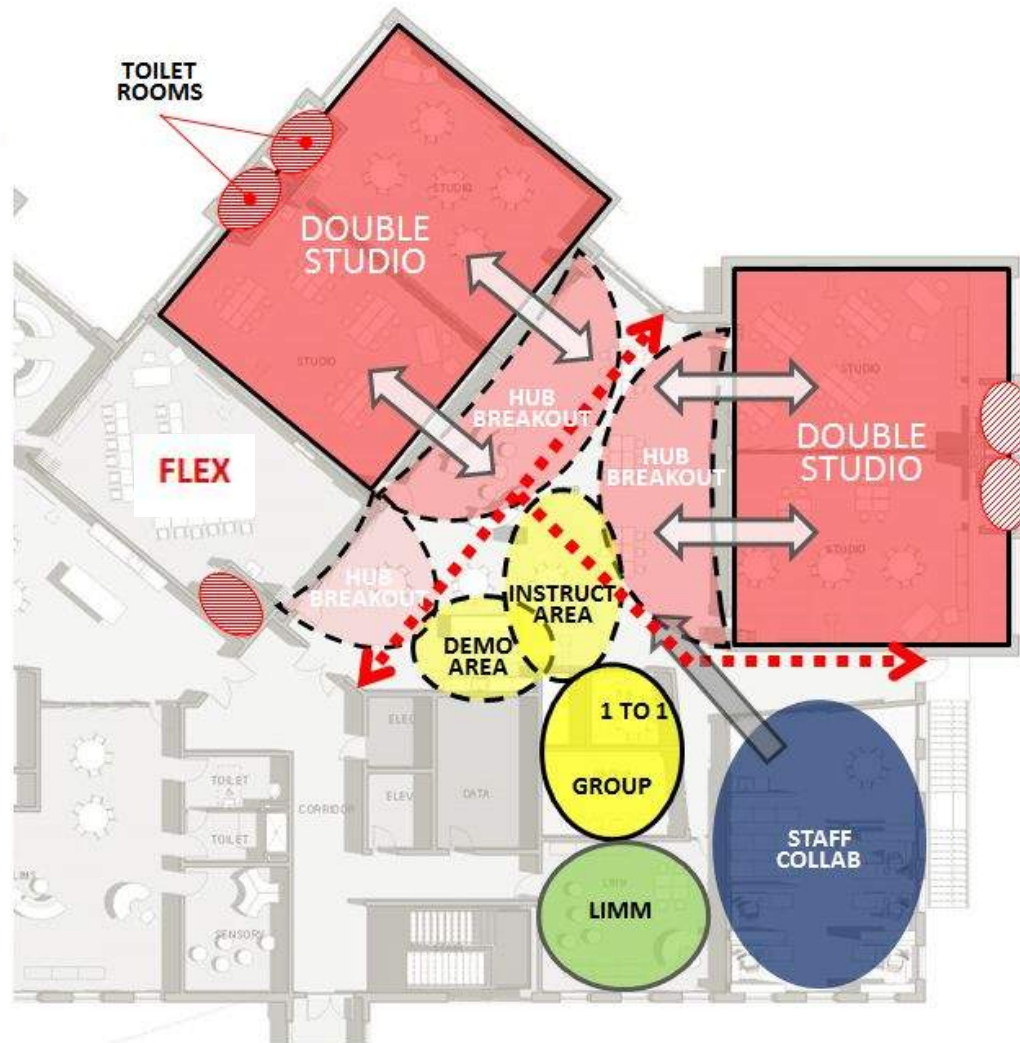
# Our Model

## EAST NEIGHBORHOOD

- LOWER FLOOR - PRE-K
- UPPER FLOOR – KINDER

## LIMM ROOMS

- CURRENTLY, ONE ON EACH FLOOR
- PER PFD ONLY ONE PERMITTED
- SPACE IS ACCESSIBLE FROM CORRIDOR AND HUB





GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

# Our Model

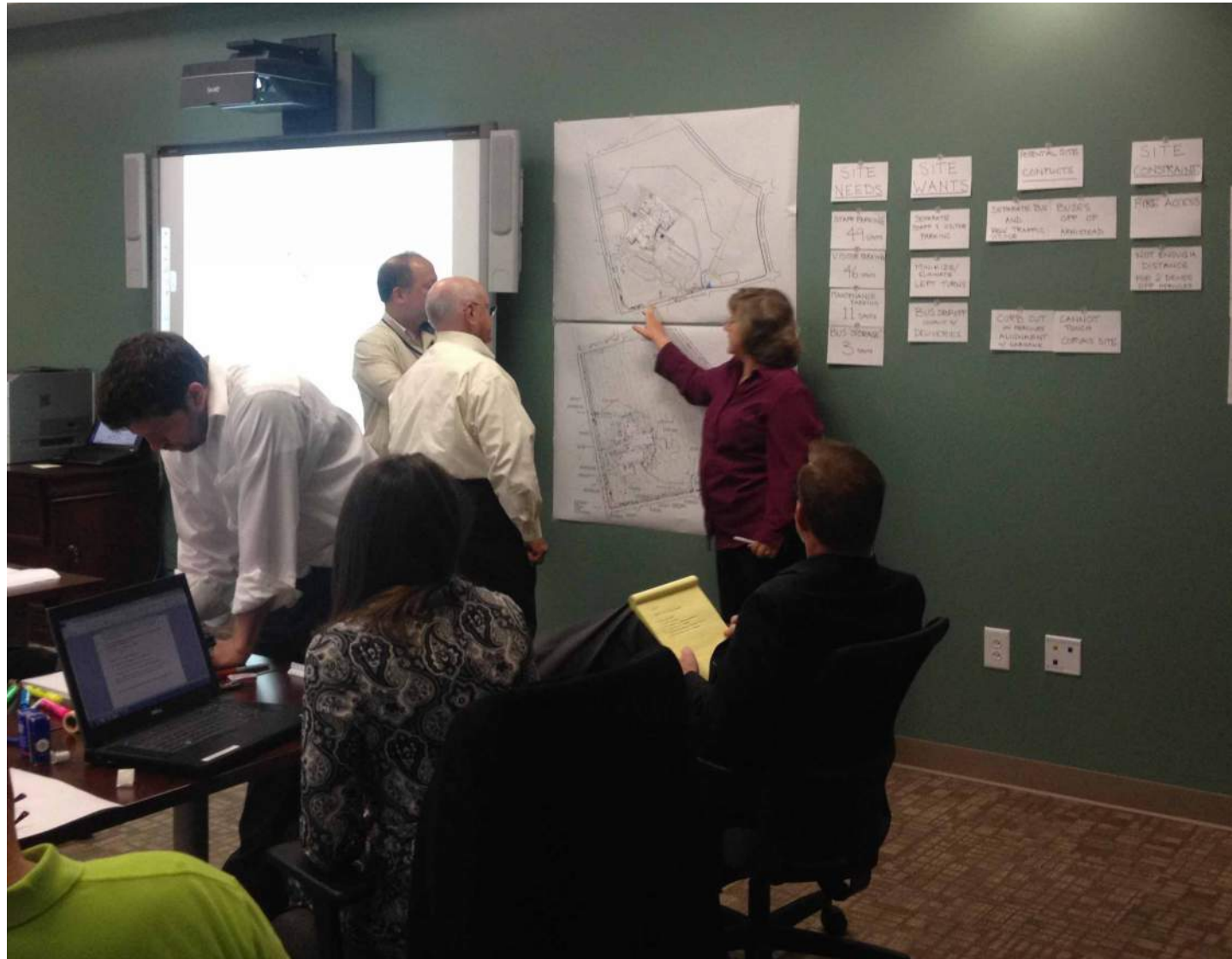






# GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

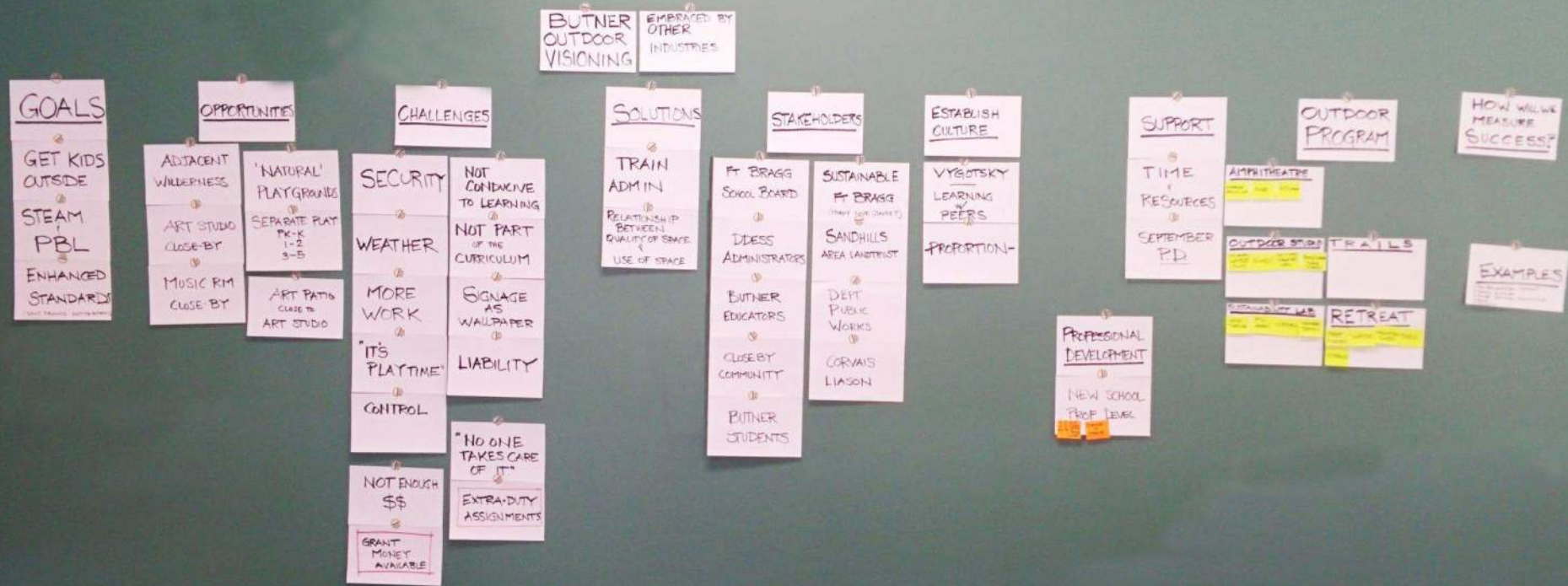
## Our Model





## GETTING INSIDE THE OUTSIDE: CASE STUDIES IN OUTDOOR LEARNING

# Our Model





# GETTING INSIDE THE OUTSIDE AT BUTNER ELEMENTARY: BREAKING THE BARRIERS FUNDING



**GETTING INSIDE THE OUTSIDE AT BUTNER ELEMENTARY: BREAKING THE BARRIERS**

# CLIMATE

# GETTING INSIDE THE OUTSIDE AT BUTNER ELEMENTARY: BREAKING THE BARRIERS 'ATTITUDES'





# GETTING INSIDE THE OUTSIDE AT BUTNER ELEMENTARY: BREAKING THE BARRIERS PROFESSIONAL DEVELOPMENT





➡ 6+ months prior

➡ Determine Model

➡ Select Leader

 3+ months prior Professional  
Development Develop  
Partnerships

 **First 6 Weeks** **Explore Outdoor  
Learning Opportunities** **Discuss  
Opportunities**

 **First Year** **Monitor Use** **Share Experiences**



 **Second Year** **Grow and Extend** **Develop Additional Partnerships**

# Outdoor Learning for All



# Case Study

## Butner Elementary

- Presentation of Design

# Thanks!

## Any questions?

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