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# Healthier, happier schools:

How to improve performance of existing UK schools

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## INTRODUCTION

# 1.0 Why do we need to address health and wellbeing in primary schools?

### **VULNERABILITY**

Buildings impact occupant wellbeing. Children are more vulnerable to environmental risk than adults

### **EXPOSURE**

Over a school day, children spend 50-80% of their waking hours in school

### **POTENTIAL IMPACT**

Poor school environments increase sickness, reduce performance, staff productivity and retention.

### **EXISTING SCHOOLS**

Old schools, poorly maintained, limited understanding of condition, poorly regulated performance

## BACKGROUND

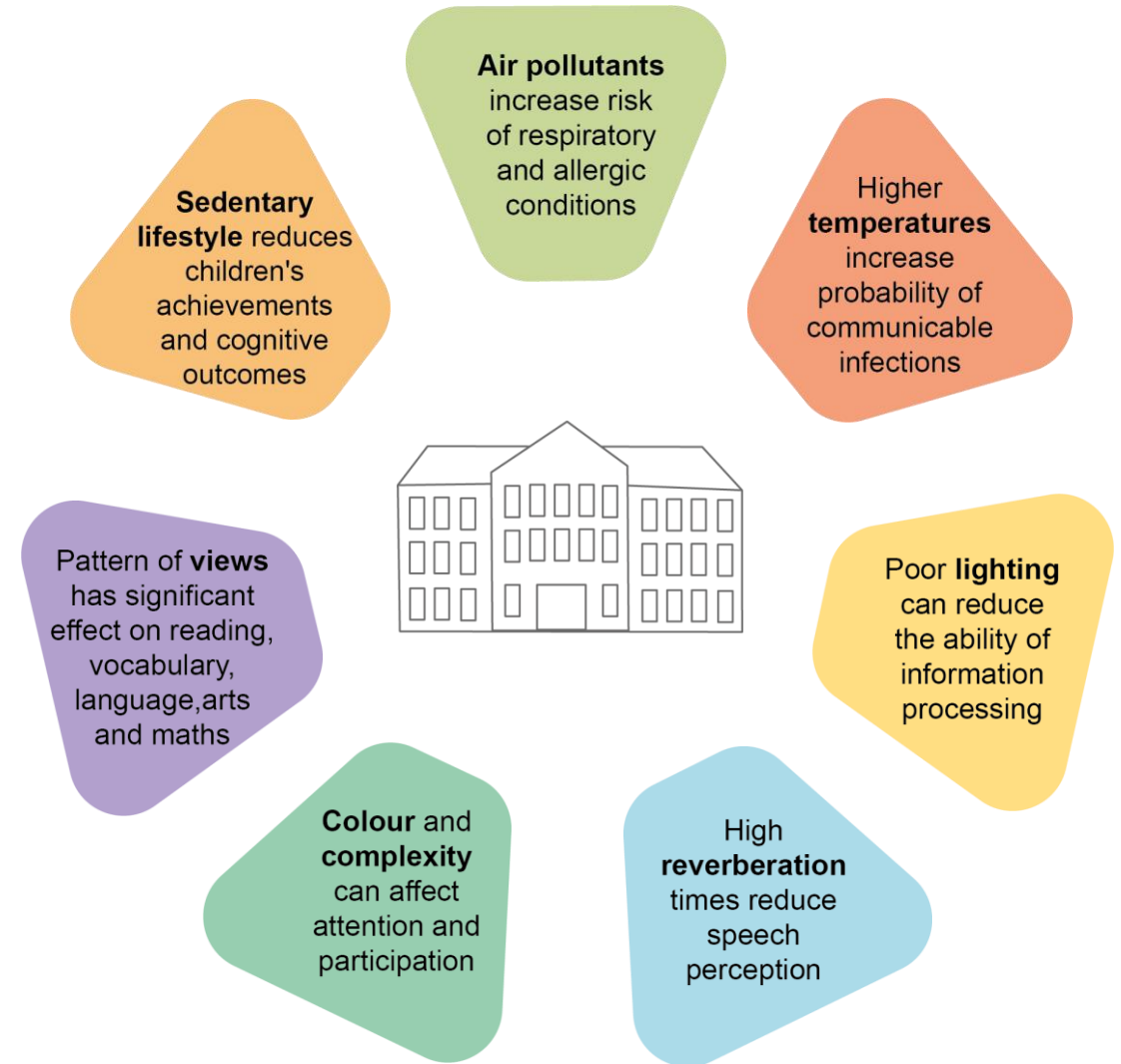
# 2.1 Impact of Design

There is a clear correlation between poor school environments, increased sick leave, and reduced academic performance.



Differences in the physical characteristics of classrooms explain 16% of the variation in learning progress over a year

- Barrett, Zhang, Davies, Barrett 2015



## BACKGROUND

# 2.2 What is the state of existing schools?

- 70-85% of schools that are currently in use will still exist in 2050 (CIOB 2018)
- No comprehensive record of the detailed condition of existing schools, its potential impact on occupants, or accurate understanding of refurbishment need
- Evidence shows negative relationship between building age and student attainment (Earthman 2004)
- Surveys show performance is deficient (eg. Acoustics) and context is significant



Much of the school estate is more than 40 years old, with an estimated 60% built before 1976 ... an estimated 40% of the estate was built between 1945 and 1976 ... designed to last 60 years ... a large number of schools require substantial repairs

– Morse 2017

## BACKGROUND

# 2.3 How is performance regulated?

- Existing state schools are covered by The [School Premises Regulations \(SPR 2012\)](#) and the Independent [School Standards \(ISS 2014\)](#).
- Standards are limited and vague
- Compliance is evaluated through Ofsted – focus is on pedagogy



accountability for the condition of the school estate is weak - there are limited mechanisms for holding local authorities and academy trusts to account for keeping their buildings in good condition

- Morse 2017

## KEY ISSUES IN EXISTING SCHOOLS

# 3.1 Methodology

### CASE STUDY SCHOOLS

3 case study state schools urban areas South-West England & London. Various ages/construction methods/materials. Typically nat vent, various heating systems.

### LITERATURE REVIEW

Experimental built environment research, child health studies, frameworks, design guides, government health programmes, case studies, and regulatory standards

### FRAMEWORK



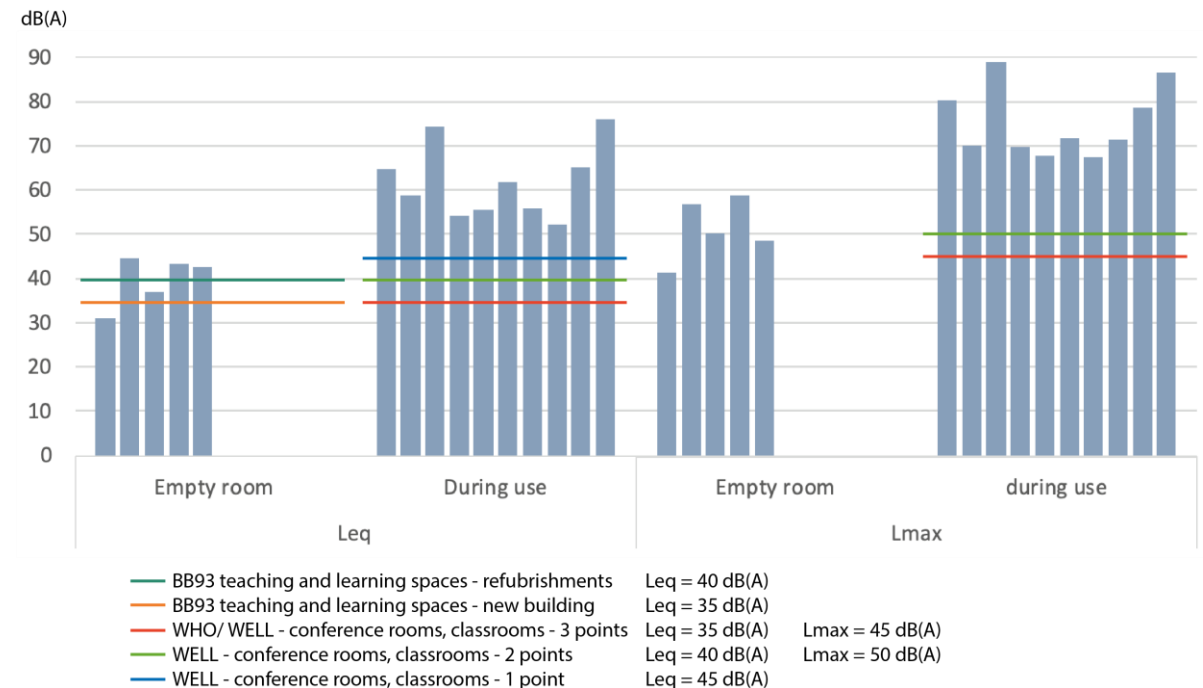
### DIAGNOSTIC PROCESS

Staff surveys, interviews, physical assessment, and environmental monitoring. Self-reported data (surveys) is reinforced (triangulated) by physical assessments and environmental monitoring

## KEY ISSUES IN EXISTING SCHOOLS

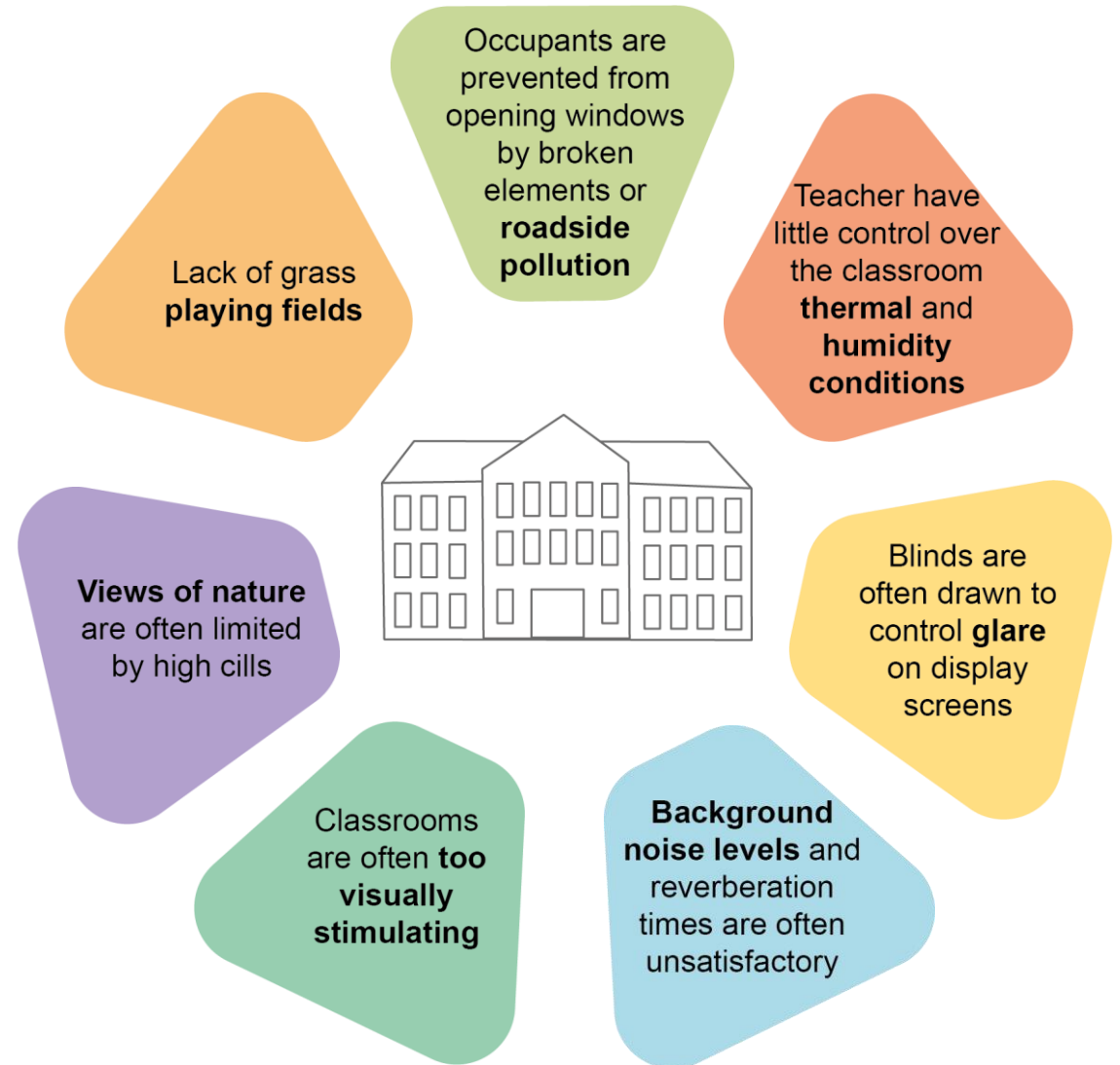
# 3.2 Case Study Results

- Data compared to key benchmarks including CIBSE Guides, WHO standards, Building Bulletins, Building Regulations, ASHRAE standards, the WELL Building Standard, best practice guidelines.
- Many of the spaces failed to meet benchmarks for CO<sub>2</sub> and VOC levels, temp & humidity, illuminance, noise levels and reverberation
- Almost all classrooms and shared spaces exceeded noise standards and reverberation times set out in BB93 for refurbishment.
- Performance failures and the causes – some building fabric performance, but many associated with operation & management



## KEY ISSUES IN EXISTING SCHOOLS

# 3.2 Case Study Results













## KEY ISSUES IN EXISTING SCHOOLS

# 3.3 Case Study Findings

- comprehensive understanding only achieved through a **detailed building inspection** and **consultation** with school stakeholders
- Need to understand operational issues, maintenance and management policies
- case-by-case basis
- conditions and interactions can change - ongoing monitoring is necessary
- Solutions must be developed through consultation

# 4.0 Diagnostic toolkit

A draft framework was developed and tested in the case study evaluations, then subsequently revised before incorporation into the diagnostic toolkit. The diagnostic toolkit includes:

- health and wellbeing framework
- staff surveys,
- physical assessment matrix
- general guidance for monitoring
- recommendations and benchmarks under each factor



# 5.0 Discussion



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