Cost	Evidence strength	Impact (months)	Effect size
£££££		*0*	*0.00*

What is it?

The built environment is the school building and the physical conditions of the school. Related interventions include moving to a new school building and improving the design, air quality, noise, light, or temperature of an existing building or classroom.

How effective is it?

Overall, changes to the built environment of schools are unlikely to have a direct effect on learning except at the extremes: impact is minimal once an adequate building standard has been achieved.

Moving to a new building could be an effective part of a whole school change that seeks to improve behaviour and establish new norms (similar to introducing or changing School Uniform), but there is no evidence that new buildings or particular aspects of architecture directly improve learning. Where a new building is being used as a catalyst for change, there is some evidence supporting co-design, or involving teachers and other staff in the process to help them take responsibility for learning spaces and change their behaviours as they adapt to new settings.

Most individual factors in the physical environment show a relationship with learning only at the extremes. If the noise levels are very high (such as under the flight path of an airport) then there can be a measurable detrimental effect on learning. Very warm (particularly above 30°C) and very humid conditions can cause a loss of concentration and drowsiness. Very low lighting levels can be a barrier to reading and writing but it appears that lighting in schools is usually adequate.

The evidence suggests low internal air quality does have a negative impact on attainment (reducing word recognition by 15% in one study). Low air quality can occur due to the build-up of carbon dioxide in poorly ventilated classrooms.

No robust impact evaluations of the effect of physical environment on academic outcomes appear to have been conducted in the Arab world in recent years. The existing studies on physical environments in focus on the design of school buildings and on the quality of classrooms.

Studies in Algeria, Saudi Arabia, Kuwait, Qatar, Egypt and Jordan discussed the alarming health hazards that current indoor air quality and poor ventilation could have on exposed students. As such, providing thermal comfort and indoor air quality inside these classrooms is a necessity to increase students' comfort level and health, which in turn could have a positive impact on their achievement.

Further research is needed to examine the effect of physical environment on both students and teachers performance. Due to the hot and arid climate in most of the MENA region, research programs in the field of indoor air quality should be proposed and implemented for schools in order to improve the indoor air quality and ventilation and reduce potential health hazards on students.

How secure is the evidence?

The research on the impact of the built environment on learning is generally weak, and is mainly based on correlational studies or drawn as inferences from wider environmental research. There are very few rigorous experimental designs, and this makes it hard to establish causal claims about the impact of physical changes.

What are the costs?

It is very difficult to estimate the costs of changes to the built environment as they are usually part of capital spending, rather than a recurrent part of a school budget. A new secondary school costs about 15 million GBP (19.3 million USD, 13.7 million JOD) for 1,500 pupils or about 10,000.0 GBP (12,863.8 USD, 9,120.4 JOD) per pupil. However, several generations of pupils are likely to use the building. Improving air quality can be done relatively cheaply with better ventilation, filtration, and the use of dehumidifiers where necessary. Overall, costs are estimated as low.

Costs originally calculated in GBP and USD; equivalent GBP, USD and JOD calculated via oanda.com on 22/09/20.

As yet there is no information about local costs.

What should I consider?

Most environmental factors have an impact on classrooms only at the extremes.

Air quality is likely to be the most significant factor affecting learning, particularly where there is poor ventilation or high levels of dust and other pollutants.

High levels of external noise may also have a negative effect on pupils' performance.

If you have a new learning environment, it provides an opportunity to change the expectations and behaviour of pupils, but it is unlikely to have a direct impact on learning without other changes. Have you considered how you will take advantage of any new environment to bring about improvements in expectations and behaviours?