

# **THE VALUATION OF INTANGIBLES: EXPLORED THROUGH PRIMARY SCHOOL DESIGN**

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## **Abstract**

It has become commonplace to refer to the potential for good design to lead to schools that raise educational attainment, as well as offices which promote teamwork and productivity, and hospitals where patients recover more quickly. These claims correspond with a considerable re-awakening of interest in the impact of the built environment on outcomes and a growing evidence base. Some private sector organisations have deliberately invested in architectural design to achieve specific, if intangible, outcomes, but recent public sector audits of schools reveal designs where best practice has not been achieved and where the rhetoric about design and educational attainment is unlikely to be matched in reality. There is a need both for better evidence about the impact of design on outcomes, and for ways to quantify the benefits of good design so as to take them into account in affordability calculations. The pilot study reported here investigates the impact of good design on ‘improved pupil supervision’, ‘increased attendance’, ‘better well-being’, ‘enhanced educational attainment’, ‘flexibility of teaching spaces’, and other intangible benefits. The paper concludes by suggesting that improved understanding of the impact of design on outcomes, combined with new valuation methods for capturing intangibles, should raise awareness of appropriate levels of investment needed to achieve design quality and deliver particular outcomes.

**Keywords:** Architectural value, design quality, intangibles, outcomes.

## **INTRODUCTION**

The last five years or so has seen a remarkable revival of interest in the impact of good design on outcomes, and education is one of the sectors where this revival is particularly pronounced. Other sectors include healthcare and offices. There is a long history of interest of this kind. In the nineteenth century for example, E. R. Robson, architect to the London School Board, stressed the therapeutic value of sunlight when he wrote:

‘It is well known that the rays of the sun have a beneficial influence on the air of a room, tending to promote ventilation, and that they are to a young child very much what they are to a flower.’ (Robson, 1874)

Accordingly, schools of the period used tall windows to admit light, and high- and low-level opening lights for controlling ventilation. Between the first and second world wars, there was a revival of these concerns and a renewed interest in the physiological benefits of sunlight which influenced the design not only of schools but also health centres and sanatoria. Large windows, often in horizontal bands, were an architectural expression of the desire to admit light.

In the second half of the twentieth century a more ‘scientific’ approach was taken towards the study of buildings and their impact on people under the heading of ‘architectural psychology’ (Canter & Lee, 1974). However, a subsequent reaction against the notion of ‘architectural determinism’ – the proposition that there is a direct causal and mechanistic link between the built environment and human behaviour – resulted in many of the lines of enquiry effectively ceasing<sup>5</sup>.

The revival of interest in the UK on the impact of buildings on outcomes follows a decade when built environment research was strongly focused on business process improvements in construction aimed at making the industry more efficient by: cutting waste; reducing costs; encouraging collaborative working arrangements; improving health and safety, and exploiting information and communication technologies.

Gradually the design community responded through initiatives about the quality of the product. The RIBA Futures Group commissioned two essays on *the value of architecture* (Worpole, 1999, Loe, 1999). The RIBA Practice Committee formed a Constructive Change group and organised a conference in 2000 called *Design Quality – the evidence*. The Construction Research and Innovation Strategy Panel (CRISP) convened a Design Task Group. The Construction Industry Council commissioned the Science Policy Research Unit to develop Design Quality Indicators as a means to assess the product – in response to the Movement for Industry’s Key Performance Indicators with their emphasis on benchmarking the construction process. Housing Quality Indicators were devised. The Royal Academy of Engineering published a paper on *The long term costs of owning and using buildings* which promoted whole life costing and introduced the 1:5:200 ratio between *initial capital cost*, *lifetime facilities costs* and *lifetime business operating costs* as a reminder to clients that it was important to look at the possible improvements to staff productivity and business outputs of a well-designed building rather than just the initial capital cost.

Most significantly of all a new body CABE, the Commission for Architecture and the Built Environment, now funded jointly by the Department for Culture, Media and Sport (DCMS) and the Office of the Deputy Prime Minister (ODPM) was brought into being. One of CABE’s early successes was to influence government to launch the *Better Public Buildings* campaign intended to bring about a step change in the quality of our public buildings. The introduction to the campaign said:

‘...we know that good design provides a host of benefits. The best designed schools encourage children to learn. The best designed hospitals help patients to recover their spirits and their health. Well-designed parks and town centres help to bring communities together.’ (DCMS, 2000)

CABE also took on the major task of collating the evidence about good design and its impact on social and economic outcomes. Its first cross sectoral report *The value of good design* stated:

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<sup>5</sup> Although the Environmental Design Research Association has successfully continued to run conferences every year since 1969.

‘Good design is not just about the aesthetic improvement of our environment, it is as much about improved quality of life, equality of opportunity and economic growth. ... Good design does not cost more when measured across the lifetime of the building or place ...’ (CABE, 2002)

CABE went on to commission literature reviews in several key sectors –schools, healthcare, housing and urban design, and in some cases turned the understanding into design guidance (CABE, no date).

## **OUTCOMES IN THE SCHOOLS SECTOR**

Schools figure prominently as a sector where there is widespread interest in good design. Feilden (2004) championed the need for evidence to demonstrate that ‘well designed’ new buildings provide better academic results than ‘poorly designed’ ones so as to help ensure that new schools offer genuine value for money through improved functionality, performance of pupils, and recruitment and retention of staff.

Two major investigations have been carried out by PricewaterhouseCoopers for the Department for Education and Skills (PricewaterhouseCoopers, 2001 and 2003) the first of which found that capital investment in school buildings had a positive influence on staff morale, pupil motivation, and effective learning time, while the second reported that capital investment in premises (and IT) had a measurable impact on learning outcomes.

More recently a group from the University of Newcastle’s Centre for Learning and Teaching has undertaken a review (Higgins, Hall, Wall, Woolner, & McCaughey, 2005) examining the literature on:

- What makes a good school (physical) learning environment;
- What impact do (physical) school learning environments have on student behaviour, motivation, learning and achievement;
- Which components/elements of school learning environments make the most difference to pupil behaviour, motivation, learning and achievement, and why;
- What evidence exists to indicate the relative balance between the physical environment and the emotional and cognitive environments on pupil behaviour, motivation, learning and achievement?

The introduction to the paper notes three striking features of the literature:

- ‘the relative paucity of research on effective learning environments’ and that completed research ‘seems to be largely predicated on a traditional view of ‘chalk and talk’ learning in standardised ‘one size fits all’ institutions’.
- that ‘it is the extent to which, and the ways in which, school users are engaged in the school design process that determines the success or failure of the resulting design. The message is clear. School designs cannot be imposed nor bought off-the-shelf.’
- that ‘in a changing world no design solution will last forever, so the process of user involvement must be continually refreshed and iterated to support ongoing change.’

The review’s conclusions about the school built environment are that:

- There is strong, consistent evidence for the effect of basic physical variables (air quality, temperature, noise) on learning, but that once minimal standards are attained, evidence of the effect of changing basic physical variables is less significant.
- There are forceful opinions on the effects of lighting and colour, but the evidence is conflicting.
- Other physical characteristics affect student perceptions and behaviour, but it is difficult to draw definite, general conclusions.
- The interactions of different elements are as important as the consideration of single elements.

### **PUTTING A VALUE ON INTANGIBLE BENEFITS**

A widely acknowledged difficulty with many of the benefits associated with good design is that they are difficult to measure, or intangible, and this makes it difficult for those who procure buildings to assess how much it is worth investing in design and in construction. This is a topic first investigated by Rouse (2004) who describes how a number of corporate clients tried to measure architectural value to justify their investment in it. All the case study organisations recognised the corporate benefits from architectural investment, representing both tangible benefits of the sort that can be counted by traditional cost/benefit but also intangible benefits that are more difficult to measure. Employee satisfaction was the most highly rated motivation; human capital is the major resource of the organisations and they seek to enhance the ability of their employees to contribute to turnover and profitability. Corporate policy in architectural investment was also very important; design champions at senior levels within the organisation and corporate precedents for high quality architecture were both found to be important. For seven of the ten organisations, procuring a building was part of a much wider corporate development process – with the goals typically of transforming how the company does business; encouraging creativity, enhancing communication, promoting team work, operating less formally, encouraging flexible working and reducing hierarchy. Rouse argues that if the benefits of architectural quality and value can be demonstrated and quantified then additional investment into the built environment can be released.

In the private sector, some well-informed clients such as those studied by Rouse, are - to a greater or lesser extent - aware of the potential of good design to add value, are prepared to invest to ensure that value is delivered; and have explored cost/benefit type methods for assessing value. Elsewhere however, and particular in the public sector where concerns about accountability can discourage the exercise of judgement and discretion, there is a greater need for evidence about the delivery of value from good design and new methods for valuing intangible benefits. In the absence of quantification of delivered value, there is a perennial risk of building down to a cost rather than up to a value. Documented examples can be found in the schools sector where an assessment by the Audit Commission (2003) found that architectural quality was below best practice for both traditionally funded and early PFI schools, while a similar assessment of early PFI schools in Northern Ireland reported that: 'Poor internal environments were widespread and likely to lead to impact on educational achievement' (NIAO, 2004). For all the rhetoric about good design, it is not always delivered in practice.

In a direct follow on from Rouse's work, a study was undertaken on *improving the valuation of intangibles* which resulted in a classification of stakeholders and the outcomes they value, and a model which identified six different types of tangible and intangible value delivered by buildings – use value, exchange value, image value, social value, cultural value and environmental value – and suggested benchmarks that could be used to measure them (Macmillan, 2005; 2006). A key suggestion from the study was the need to move away from a single point value towards a probability curve for quantifying value – future valuation methods may offer ranges of values or a value profile, rather a single number. A matrix approach was also identified as a way of illustrating connections and dependencies between different sorts of value. Mulgan's (2005) identification of the potential of 'value maps', visual diagrams that set out in graphic form the relationships between different types of value and the flows of value they achieve, has a resonance with that work.

### **THE PILOT STUDY**

In May 2004, a pilot study was conducted on a new build primary school to investigate perceived intangible benefits – which values may be raised by its design quality – and to obtain initial feedback on valuation of intangibles.

The pilot case school was opened on 15 June 1926. It has been located on a split site for 18 years and neither of their buildings was adequately fit for purpose. A new school has been designed using the best of modern construction techniques to meet the demands of modern teaching and the community facilities and leisure opportunities that the school also provides. The new school building, whose construction works started on 15 October 2001, was opened in September 2002. The inquiring process involved interviewing the headteacher, an education officer and the architect of the school.

The interviewees were asked to rate on a scale of 1 to 10 (with 1 being the least important and 10 being extremely important), nineteen possible purposes of school design. The results are presented in Table 1. Out of nineteen purposes of the school, 'enhanced educational attainment' was rated the most important element. Other purposes that were considered as highly important include 'calm environment', 'flexibility of teaching spaces', 'users satisfaction', 'adaptability of school building', 'better well-being', 'safe routes to school' and 'improved pupil supervision'. Clearly many of these are intangible and difficult to measure and quantify with any degree of certainty.

The three interviewees were aware of the underlying value in the school delivering these intangible benefits. However, no attempts had been made to measure the benefits nor to place a value on them. Nor did they have ideas for how to measure the value of these intangible benefits. When asked, all three said they would be keen to use new valuation methods if they were available. An argument similarly put forward by the three interviewees was that better recognition and proper valuation method for intangibles may enhance design standards of the built environment. The main concern of the interviewees was the difficulty of devising such methods. These illustrate the existence of a need to explore alternative method for valuing intangible benefits in the built environment.

Purposes of school design	Rating			Total Score
	Head teacher	Architect	Education Officer	
Enhanced educational attainment	10	10	9	29
Calm environment	10	9	8	27
Flexibility of teaching spaces	10	8	8	26
Users satisfaction	9	10	7	26
Adaptability of school building	10	7	8	25
Better well-being for occupants	9	8	8	25
Safe routes to school	9	8	8	25
Improved pupil supervision	10	8	7	25
Provides community use	9	8	7	24
Meets educational guidelines	6	9	9	24
Healthy internal environment	9	7	7	23
School's profile in the community	8	9	6	23
Security and safety	10	7	6	23
Cost efficiency	8	8	6	22
Functional quality	8	10	4	22
Reduced Vandalism	8	7	7	22
Increased attendance	6	7	8	21
Parents and visitors	8	7	6	21
Local Education Authority satisfaction	6	8	4	18

Table 1: Rating of purposes of pilot case school design

The study reported here is a pilot for a more in-depth set of case studies currently being undertaken. It is not possible to report meaningfully upon the outcome until full-scale fieldwork comes to an end. However, the pilot results show encouraging signs that key stakeholders of a newly built primary school can identify the intangible benefits that have been provided by the design quality of their new school buildings, and that there is a recognised need for valuation methods that allow these benefits to be defined in some measurable way.

## DISCUSSION

The inevitable reality in real estate and construction investments is that clients always expect better value for money. Given today's emerging trend towards the concept of whole-life value, intangible benefits in buildings – such as corporate identity, staff productivity, or customer experience – are becoming increasingly acknowledged and, in property valuation methodologies, important in determining real estate value. Although traditional valuation methods, based on market value principles, typically lack the capacity to capture these tacit values, in the private sector the mechanisms of the market are able to some extent to credit intangibles. For example, the corporate image created by an architecturally prestigious office is likely to be reflected in its rental or yield. There is evidence of organisations commissioning bespoke buildings where purely commercial considerations are overridden in order to obtain intangible benefits, and methods have been devised to credit intangibles as reported by Rouse (2004). In the public sector,

however, the market mechanisms are absent, and the requirements of accountability and auditing reduce the opportunities to exercise judgment unless it is supported by facts and figures. In the absence of suitable valuation methods, the opportunities to invest in design quality so as to deliver intangible benefits are held back. This is in spite of a widespread recognition that buildings offer a wide variety of benefits to clients, users and other stakeholders (Cooper, 1982) and are rich in the range of underlying values they hold for different people at different times (Groak, 1992).

The development of alternative methods for valuing intangibles has the potential to drive a whole-life perspective and lead to long-term improvements in the built environment. Capturing and expressing underlying values will help surveying and valuation practices to mature, and assist surveyors in making more explicit and credible ‘value judgements’ (Lamont, 1955). In combination with improved understanding of the impact of building design on stakeholder outcomes, new valuation methods have the potential to lead to more informed debates about affordability of initial capital costs of construction, and also about the benefits of evidence-based design and its affordability. At best, new methods will enable wiser investments to be made, leading to greater value-for-money for both clients and society. Knowledge of intangibles should provide worthwhile value drivers for improving quality and value in the built environment.

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