

CREATING *IMPACT* IN HEALTHCARE DESIGN: ASSESSMENT THROUGH DESIGN EVALUATION

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Abstract: AEDET Evolution (the Achieving Excellent Design Evaluation Toolkit) enables its users to undertake a design evaluation through the creation of a design evaluation profile. The Centre for Healthcare Design, its developers in the UK, recommends that healthcare design can be evaluated under three basic headings: Functionality, Excellence and Impact. The staff and patient environment of a healthcare facility can have a significant part to play in creating 'Impact'.

In the UK, there is currently a major investment programme, which represents the largest ever building programme of the National Health Service. This programme represents an opportunity to raise the quality of healthcare design. This paper is concerned with an evaluation of one element – improvements in the quality of healthcare facilities through the impact of appropriate facilities in the staff and patient environment.

Keywords: Design evaluation, healthcare design, healthcare investment, quality

1 INTRODUCTION

In the UK, the NHS is currently in the middle of the biggest healthcare investment programme in the world (over £20 billion), in partnership with the private sector.

Mental health, acute and primary care trusts and strategic health authorities are all engaged in major change projects to ensure sustainable investment into services and facilities today to meet the needs of the patients of tomorrow.

In looking at the future needs for health infrastructure, it is necessary to explore links between system change, technology change, workforce and changes to the design of the physical environment. What is certain is that the healthcare knowledge base needs to be continuously expanded.

The main areas of interest in building change are:

- What are the implications of new models of care for the design of the environment?
- What evidence is there for good design influencing healthcare outcomes?
- How can the elements of design quality be incorporated into new building?
- How can the whole life costs be balanced against the design costs?
- What can we learn from buildings that have already been built in the UK and abroad?

1.1 Innovation in healthcare building

From the first wave of PFI schemes, there are examples of innovative thinking in hospital building design in the UK and the lessons from these still need to be fully explored. There are many other examples of good environmental design for healthcare facilities – both large and small – from the UK and from abroad.

There is now evidence from clinical outcome, social studies of patient satisfaction and design field that a well designed environment improves patient outcome and reduces staff costs significantly. This can lead to the development of a business case for good design.

1.2 Therapeutic environments

It is now widely accepted that the design of the environment can enhance the healing process. The work of Lawson and Phiri (2003), in their study of the effects of hospital environment on patients and staff, has already shown that the healthcare environment plays a significant role in assisting patient recovery. Douglas and Douglas (2004) suggest that the provision of welcoming, homely spaces promotes health and well-being. The NHS Estates initiative *Improving the Patient Experience* (2004) promotes the provision of a high quality built environment to promote healthcare and NHS Estates exemplify details of particular schemes in their *Design Portfolio* (2005).

This is supported by evidence drawn from scientific studies, psychological studies and architectural theory. Quantitative studies measure physiological outcomes against single variables such as noise, temperature and views. Psychological studies show that building features have observable psychological effects on users and demonstrate, for example, that different social behaviours occur in spaces where furniture is arranged differently.

Design theories draw attention to cultural and spatial considerations giving valuable insights into the design of buildings and their context. (See Ruddock and Aouad (2005) for a review of the literature on this topic).

There is a growing body of evidence that proves the value and impact of the environment and the arts on healing. For instance, Ulrich set up controlled tests in a hospital to prove that patients recovering from surgery got better more quickly and took fewer painkillers when they could see a view through a window rather than just bare walls. (Ulrich, 1983). A study carried out at Leeds Teaching Hospitals found that improved patient environments in a newly built wing at Leeds General Infirmary, which included commissioned artworks by Tonic, the arts project of the hospital, enhanced recovery times and improved patients' perceptions of the care they received from staff (Willis, 2002). (Other examples and case studies concerning the valuable effects of the use of art in hospitals can be found in Ruddock and Aouad (2005)).

2 THE ACHIEVING EXCELLENT DESIGN EVALUATION TOOLKIT (AEDET)

The Achieving Excellence Design Evaluation Toolkit (AEDET Evolution is the latest version) has been developed by The Centre for Healthcare Design. It is a tool specifically directed towards achieving excellence in design rather than ensuring compliance with legislation or regulations.

It is designed to be used by anyone involved in the commissioning, production and use of healthcare buildings. In the context of this research, the usefulness of the toolkit for design teams, estates/facilities managers and user clients such as patient groups is apparent.

AEDET can be used in a variety of situations:

- To evaluate existing buildings in order to make comparisons.

- With plans for new buildings in order to evaluate designs.
- On ‘imaginary’ buildings in order to set standards for a brief.
- At various stages during the design of healthcare buildings.
- In terms of scale, AEDET can be used at a building scale, department scale or on a complete site scale.

2.1 Using AEDET Evolution

The toolkit has 3 layers which allow users to create a design evaluation profile:

- The **scoring** layer on which you score
- The **guidance** layer that gives more detailed help
- The **evidence** layer that points to available research evidence

Dependent upon the level of detail available, AEDET can be used to score at building or complete site scale.

Healthcare building design frequently involves complex concepts which are difficult to measure and evaluate. The AEDET Evolution toolkit evaluates a design by posing a series of clear, non-technical statements, divided into ten sections and encompassing the three key areas of Impact, Build Quality and Functionality. Figure 1 shows the ten section headings in the Excel spreadsheet used in the AEDET scoring layer.

	1	2	3	4	5
Character and innovation				●	
Form and materials			●		
Staff and patient environment				●	
Urban and social integration			●		
Performance				●	
Engineering				●	
Construction				●	
Use			●		
Access				●	
Space			●		

Source: AEDET (2005)

Figure 1: The ten sections in the AEDET toolkit

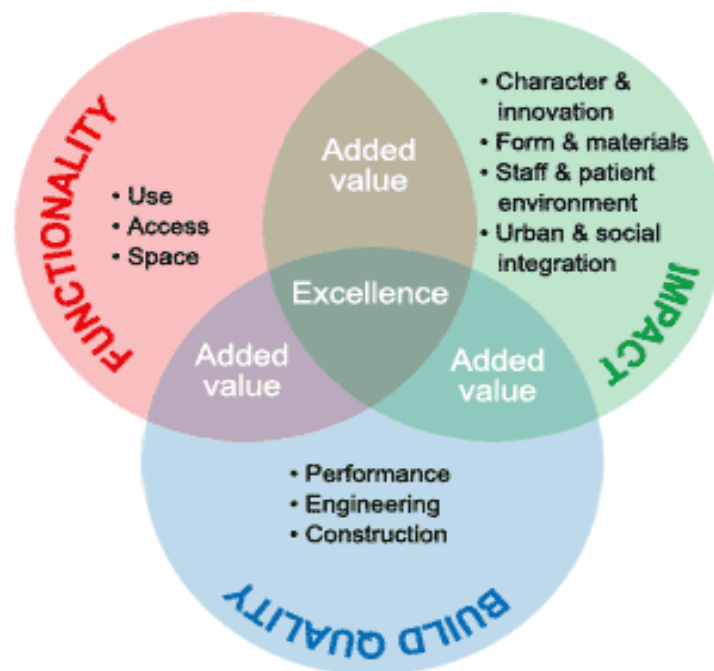
The AEDET toolkit could be a major influence, assisting Trusts and the NHS in determining and managing their design requirements from initial proposals through to post project evaluation. It forms the key agenda for design reviews, it is being used as a benchmarking tool, and forms part of the guidance for ProCure21, PFI, LIFT and conventionally funded schemes.

2.2 The creation of *Impact*

There are strong arguments for incorporating commissioned artworks into new healthcare development schemes. As already indicated, AEDET recommends that design be evaluated under three basic headings: Functionality, Excellence and Impact. (See Figure 2).

The arts have a significant contribution to make in creating impact. In particular, the arts can be used to:

- Create local distinctiveness
- Ensure that the built environment reflects individual human scale
- Meet the spiritual and emotional needs of patients and staff
- Support and improve way-finding, for example by creating landmarks at entrances and in key public spaces
- Enhance landscaping and interior design through creative use of materials and finishes
- Enhance the prestige and reputation of the NHS Trust during the redevelopment process



Source: AEDET (2005)

Figure 2: The three basic sections and the ten assessment criteria of the AEDET toolkit

2.3 Arts programmes and *Impact* in the staff and patient environment

There are already several examples of projects in NHS Trusts, which are designed to incorporate arts programmes into health facilities. One such is *Moving On*, which is an arts for mental health programme. This programme will, over the next 3 years, involve service users in working with commissioned artists to create artworks to enhance a whole wave of new buildings and facilities for mental health services

across the Avon area of the Avon and Wiltshire Mental Health Partnership NHS Trust.

Moving On aims to develop integrated arts commissions to create the best possible environment for care in the new mental health facilities being developed. The impact of the programme will be assessed after three years and the evaluation will:

- Explore the impact of the arts programme on patients' and staff experience of the environment
- Explore the impact of the arts programme health and wellbeing, taking into account the diverse needs of user groups
- Explore experiences of involvement and ownership in relation to the project
- Identify the added value of arts-based interventions in the management of transitions to new buildings and services

Also, as another example, a three year *Study of the Effects of the Visual and Performing Arts* at the Chelsea and Westminster Hospital has shown that live music in the waiting area of the high-risk antenatal clinic was effective in lowering blood pressure levels of patients and that the unborn child responded to live music by significantly increasing its heart rate - a sign of well being. (Moving On, 2005)

The study also found that for patients receiving chemotherapy treatment, visual art was effective in reducing levels of depression, while live music reduced levels of anxiety.

3 THE STAFF AND PATIENT ENVIRONMENT

An important development, based on the AEDET toolkit, has been the evolution of a supporting toolkit to enable the staff and patient environment in healthcare facilities to be more fully evaluated.

ASPECT stands for *A Staff and Patient Environment Calibration Tool*. It is based on a database of over 600 pieces of research. That research deals with the way the healthcare environment can impact on the levels of satisfaction shown by staff and patients and on the health outcomes of patients and the performance of staff.

This research and the ASPECT toolkit itself are set out under 8 headings. ASPECT can be used as a stand alone tool, or it can be used to support AEDET Evolution to provide a more comprehensive evaluation of the design of healthcare environments. When used to support AEDET Evolution it enables the user to score the Staff and Patient Environment Heading of AEDET Evolution in a more detailed, accurate way.

Table 1: Scoring layer of the ASPECT toolkit

Section	Focuses on:
<i>Privacy, company and dignity</i>	Visual privacy Privacy for conversation Opportunity to be alone Opportunity to be with others Toilets/bathrooms are located conveniently and discretely
<i>Views</i>	Spaces have windows Patients and staff can see the sky Patients and staff can see the ground Calming views Interesting views
<i>Nature and outdoors</i>	Patients can go outside Access to usable landscaped areas Patients and staff can easily see plants, vegetation and nature
<i>Comfort and control</i>	Variety of lighting patterns Ease of control of artificial lighting Ease of exclusion of sunlight and daylight Ease of control of temperature Windows/doors can be easily opened Design layout minimises unwanted noise
<i>Legibility of place</i>	Entrance is obvious Easy to understand layout Logical hierarchy of places in the building Way out is obvious Obvious where to go to find a member of staff Different parts of the building have different characters
<i>Interior appearance</i>	Patient spaces feel homely Interior feels light and airy Interior has a variety of colours and views Interior looks clean and tidy Interior has provision for art, plants and flowers Ceilings are designed to look interesting Patients can display personal items Suitable floor coverings
<i>Facilities</i>	Bathrooms are safe Choice of bath/shower, assistance/non-assistance Religious observance can take place Live performances can take place Easy chairs and tables in patients' spaces Facilities to make drinks Vending machines for snacks Facilities for relatives' overnight stays
<i>Staff</i>	Convenient place to change and a safe store Convenient place to concentrate on work Places to obtain meals/snacks Relaxation area segregated from patients Access to IT Basic banking and shopping facilities

ASPECT is a tool for evaluating the quality of design in patient environments in healthcare buildings. It delivers a profile, which indicates the strength or weaknesses of a design or an existing building. Because of the nature of design, which inevitably

involves tradeoffs, it may not be possible to produce a building, which has (or would have) a maximum score for all sections. Indeed, it may be the case that a high score for one statement may be scored low on another statement. The ASPECT toolkit has been devised to enable alternative designs to be measured and scored.

There are eight sections in the ASPECT toolkit, as illustrated in Table 1.

4 ASSESSING THE USEFULNESS OF THE DESIGN EVALUATION TOOLKITS

The assessment of the usefulness of both the AEDET and ASPECT toolkits is ongoing. This doctoral research is currently at the stage of developing case studies based on work with a large Mental Health Trust in the North of England. The Trust operates fifteen units of different sizes, with various functions and a variety of facilities. It delivers services to support people with mental health, learning disability and substance misuse problems.

As part of its mission, the Trust has a stated aim to create the right conditions for its staff to put patients' needs at the forefront. In this respect, evaluation of the health units is essential as it is obviously important to the organisation to ensure that a high quality environment is provided for both staff and patients.

The case study methodology on which this research is based, therefore, has two major elements:

Firstly, an evaluation of the staff and patient environment, using an adapted version of the ASPECT toolkit. The toolkit is being used as a stand alone, and will be used to score at the scale of buildings and/or whole site levels. The calibration toolkit will be used with medical staff, non-medical staff, patients and user groups.

Secondly, the perceived usefulness of the toolkit to the design professionals, facilities managers and estate managers involved in the existing and planned units will be assessed. This will involve such questions as:

- How widely is it used in the Trust?
- If used, when is it used?
 - In the design process?
 - Post-project evaluation?

The design professionals and those responsible for the construction and management of the facilities will also be asked their opinion on other potential developments in the range of evaluation tools. A project currently being undertaken in the Salford Centre for Research and Innovation (SCRI) on 3D to nD modelling, aims to: 'enable designers and the construction industry with a tool that allows users to create, share, contemplate and apply knowledge from multiple perspectives of user requirements'. One of the objectives of the tool is to develop methodology and technology, which will facilitate the integration of time, cost and other variables such as accessibility, sustainability, lighting, acoustics and other features affecting the environmental quality of a building (SCRI, 2005). The ability to incorporate an 'Impact' factor into this analytical tool could, obviously, hold considerable benefits for a quality appraisal.

5 CONCLUSION

The NHS initiative *Improving the Patient Experience* expects design evaluation to be based on the use of such instruments as AEDET and ASPECT. For this PhD research, other tools used in the evaluation of the quality of facilities have been considered. For example, Todd et al (2002) used a novice-expert technique to facilitate agreement between the two groups about their respective views and rankings of attributes of a healthcare facility.

However, the flexibility of the NHS toolkits and the fact that they can be used firstly as early as possible in the design process, then repeated as appropriate throughout the development of the design, before being applied in the post-project evaluation, means that they can be used not only to inform the briefing process but also to assess the degree of compliance with the original brief.

[Notes on acronyms used in the text:

LIFT: *The UK Government's Local Improvement Finance Trust (LIFT) is a major initiative designed to stimulate investment in local primary and social care facilities.*

PFI: *The Private Finance Initiative is a programme designed to enable the delivery of the Government's investment plans for public services.*

Procure21: *On the basis of recommendations in the Egan Report, Procure21 has been introduced as a partnering framework for the Department of Health and the NHS.]*

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