

Abstract

What do architects think when designing schools? How do they approach the problem of designing a learning environment? What understanding do they have of the educational process? There are many questions concerning school design and what approaches best identify the important elements when designing a school. This study explores the ways in which designers understand and influence learning environments. Architects providing specialist design services in educational settings were interviewed using a semi-structured format. Project files were analysed as case studies to illustrate the reality of designing a school. This study recognises and explores the critical role of the designer as a mediator of the requirements of regulators (government-Department of Education) and users (teachers). It emerges that procedural elements of design are influenced by the values and educational understanding of the participants as well as by the regulations and approvals process. It is a role of great responsibility and can be a deciding factor in the success of the educational setting. Knowledge of what happens and how the school design system is organised gives both designers and anyone related to designing a classroom a greater awareness of learning spaces.

1 Introduction

Designing schools is a particular kind of project in the world of architecture. It belongs to the large array of institutional buildings that society creates. Designing these buildings (e.g. hospitals, schools, government buildings, etc.) involves a series of procedures that do not occur when designing a private house. The interactions among people vary and the architect has to interact with a diverse group of people.

This paper explores the ways in which **designers** understand and influence learning environments and recognises the critical role of the architect as mediator of the requirements of regulators (government) and users (teachers). It results from one strand of work within a larger study of the relationships between the designed classrooms and teachers' practice. It focuses on the way in which architects approach the design of a school, but considers teachers and regulators as part of the process.

During the late 1960s and early 1970s with rising school population, there were innovative approaches in education that were reflected in experimentation and investing in educational buildings (there was also an increase in research and publications during this period). Since then, during the 1980s and early 1990s, this innovation practically disappeared. During the last 20 years with a declining school population, there has been little demand for the construction of new school buildings and there are therefore only a few architectural practices which specialise in school building design. With the approach of the new century and with a renewed focus on education, this demand seems to be slowly increasing and more investments are once again beginning to be made.

2 Methodology

2.1 Architects

In order to identify the ways in which architects approach the problem of designing a learning environment, I interviewed architects providing specialist design services in educational settings. Project files were also analysed to investigate and illustrate what happens through the reality of a whole project.

The Royal Institute of British Architects (RIBA) directory was used as a source of reference to identify possible practices. Sixty-six practices were contacted and 39 replied. Twenty-three did not have the relevant experience in school design to participate in the study, but 16 practices provided specialist services in school facilities and these form the study group.

A semi-structured interview format was employed with all these architects. These provided a deeper understanding of the procedural aspects of designing a school as well as their personal understanding of an educational setting. The interviews were recorded, transcribed and analysed.

All architects interviewed had experience in designing schools. The more experienced ones had been involved in the early 1970s building surge. They confirmed that there are only a few practices specialising in educational facilities and those that do in the Greater London area are all part of this

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1 When the word man is used, it means human, people, individual, children, women and men. This is mentioned here to avoid any kind of misunderstanding or confusion that might occur with the use of the word.

study. Their project coverage includes: voluntary aided schools, charity schools, local education authority schools, grant maintained schools, independent schools, new buildings, old buildings, conversions, extensions and refurbishments.

2.2 Schools

In schools, lessons are being observed and identified patterns of how teachers organise and use the teaching spaces. A grid layout of the classroom is being used to identify and classify the physical elements within it and I am tracking the teacher's movement and interactions with pupils. Additionally the teachers are being interviewed to identify what kind of influence they had on the design of their classrooms and to what extent they are aware that they can design and influence it. This is taking place in the context of primary and secondary schools, and in general and specialist (workshops, laboratories and studios) classrooms.

2.3 Regulators

Regulators can be classified in two different levels, local and national. The local regulators are part of the Local Education Authorities (LEA) or the Diocesan Boards. These are normally labelled as the educational/building officers and are responsible for commissioning and briefing the architects. They are quite often the project managers. National regulators are linked to the Department for Education and Employment (DfEE) and are responsible for writing the regulations, recommendations and guidelines.

I have dealt with their policies through a review of their literature and published reports, but semi-structured interviews were also carried out to enlighten the process.

2.4 Focus

The focus of this paper lies on the architects' perceptions of the process of designing schools. The viewpoints related to schools and regulators stated here are taken from the architects' own reality.

3 The importance of human-environment relationships

It is the architects' belief that buildings affect people. What architects design influences the users in the spaces.

"...I wouldn't want to be an architect if I didn't think that buildings, and the environment they create, are important..." (Int.09)

"...most people don't realise the effect that a space has on them..." (Int.10)

The field of environmental psychology is concerned with the relationship between people and the environment. There are a few, if any fields that do not, at some point, touch on the relationship between man¹ and his environment (Colman, 1975). The environment plays a significant role in the lives of people (Rivlin, 1985). Man is an active organism that can both select and modify his own surroundings. As Lee puts it, it is predictable that the most potent influences upon man and man's most powerful influences upon the environment will be found to be mediated through physical features which in turn control social behaviour. Our experiences within the environment give rise to emotions and beliefs, feelings, attitudes, judgements and values.

"... buildings in general do affect the people that occupy and use them. ... You can have pleasant rooms, ... nasty rooms, you can have useful ones and useless ones, ... you can have rooms ... with historical ... value, you can have futuristic ... ones, and I think that when you walk into those kinds of spaces..., they have more effect on you than you can ... actually realise, maybe a sense ... of well being ...It is part of what architecture is about. ... You can walk into a building and it can lift your spirits ... or you can walk into another and feel claustrophobic..." (Int.03)

4 Procedures

The process of designing, constructing and maintaining a building has many common aspects across different settings. The initial motives for construction can be either need or profit. To realise a profit, for instance,

developers must construct a building within some cost range. Then there are decisions regarding zoning laws, codes, legal and political constraints, the economic criteria and so on. The design team must use current technology on construction and also be aware of the social and cultural expectations in producing a new building (Heimstra, 1978). Creating a built environment is not a freewheeling process and architects may feel they have many constraints on their work.

"...Different architects will work in a different way..." (Int.04)

"...every project is different. Every project comes in a different form. And have different sorts of requirements..." (Int.07)

"...I mean every case is so incredibly different and the priorities of the schools are very different..." (Int.10)

"Every single project we do in education is different..." (Int.11)

"...each school is different and the people we talk to are very different..." (Int.12)

"...I think there are as many ways of approaching as there are schools, ..., schools are always different..." (Int.13)

These responses to designing a school are not surprising. They are designers' perceptions of projects. They will always be different. There will be similarities of procedures and stages, but these are led by the process towards a resolution of the actual design.

4.1 Commissioning of School Projects

The architect can be commissioned by an educational developer or be appointed by a Local Education Authority or even by the school itself. It depends on what kind of school it is (e.g. voluntary-aided, grant-maintained, LEA, independent) and what the source of funding is. The Educational Developer, or Building Officer, or Educational Officer, who represents the educational department where the school belongs to (e.g. Local Education Authority, Diocesan Board) is normally the one responsible for commissioning educational buildings. Because of this diversity in the commissioning, the architect's view of who

the **client** is, is not clear. When a school is an institutional building also adds to this confused context.

4.2 Who is the client

But who is this client? There is no one client. Rather as one architect put it, it is a 'multiple client' scenario. There is the financial client, the person paying for the job, and the user client, the school (that can also be the financial client). The main client is often considered the paying one.

"...the money comes from the education directorate so in formal terms they're the clients because they are commissioning the building..." (Int.09)

Others consider the school as the main client:

"...the client is the school and the school governors..." (Int.12)

There are architects that need clarification from the beginning as a result of the uncertainty and do not define one client as their client:

"The architect gets appointed by the education authority and they are the project managers. So you go in ... to what we call the money man or money woman. Then you are taken to see the ... user client, the school. So one is actually the financial client..., ... they pay your wages. And then you have the user client which is the school..." (Int.01)

"I don't actually see that there ... is one specific client. It's often not just the person who pays..., in the client organisation you have a local authority, sites and buildings ... that tends to be the people that paid you, you have the local authority educational advisors, you have the schools, you have a lot of people with all of whom you must ... interrelate." (Int.02)

"...when you are designing a school or a classroom you have to take into account the requirements of the users, the teacher and the pupils...you have to balance the requirements of the teacher,

the staff and the children and the client, the education department. " (Int.05)

"...it is kind of a multiple client...so there will be somebody who is paying for it ... there is the second client that is the school...and sometimes there is a third client... the diocese or in this case the Architects and Buildings Branch in the DfEE...so often ...it's a multiple client..." (Int.07)

It is clear that the definition of 'client' can be complex. You might find that architects coming from a private practice consider the client the one that is paying for the job, which is a realistic viewpoint. But we often encounter the situation of the 'multiple client' in which the architect attempts to balance the interactions of all the people involved.

Once an architect is commissioned, the client and the designer together are responsible for stating clearly what the building is expected to do. This document is the brief of the project. The brief should reflect a broad array of concerns affecting design decisions. These are economical, cultural, structural, sociological to name just a few.

4.3 Development of the project brief

The brief quantifies design requirements such as the amount of floor space, types of spaces, materials and any other aspect relevant to the design. The generation of the brief is an important procedure because if it is wrong, the building will not work. It can take several formats. It is common for the architect to receive a standard brief developed by the Education Authority. Sometimes the brief may be developed in conjunction with the school, using schedules to document all the requirements. The spaces are carved out of a total area that is either given by the school, by building regulations or as a result of the cost.

Often, the architect has to work closely with the school to assist them to articulate the problems so that the brief can be specified. An analysis of the whole school is required in these situations so that a development plan can be created. The brief starts developing at the beginning of the process and requires careful consideration. The

longevity of a school is influenced by a well designed development plan since whatever is done in the present will have serious influences on what the school is capable of doing in the future. Reconciling the brief with the budget is closely linked to the development plan of the school.

"...our procedure will always be to develop a brief in hand with whoever the client is or with the multiple client ... so that we are clear about what is required of us and the client group usually needs...coaxing and helping in the preparation of that brief..." (Int.07)

5 Boundaries overlap between regulations and guidelines

The Department for Education and Employment (DfEE), Architects and Building Branch (A&B), publishes various documents about how schools ought to be. These publications come in the form of building bulletins or design notes. These are not statutory regulations, but guidelines and recommendations based on:

- the National Curriculum
- research done in schools by the DfEE
- guidance given by HMIs (Her Majesty's Inspectors of Schools)
- previous documents.

These publications refer to a great diversity of areas, for instance, acoustics, space standards, suggestions for layouts.

The statutory regulations concern 'health and safety' issues and 'means of escape'. There is also a requirement to comply with the DfEE constructional standards (related to technical issues of construction) which are an alternative route to using building regulations (which apply to any building). The constructional standards refer to the building regulations in a number of areas, but provided they are followed, and the architect self-certifies that the building complies to those standards, there is no need to get involved with a building inspector. The approval can be given by the DfEE, avoiding the process of dealing with building regulation inspectors.

The building bulletins produced by the Architects and Building Branch have proved useful to architects, especially in specialist subject areas (e.g. designing science labs or design and technology workshops). However, the boundaries between statutory regulations and advisory guidelines are very hazy. Although they are only recommendations, they are treated as accepted standards that have to be complied with.

"...there is *a sort of accepted range of ...* floor area per pupil, ... , if you went to a very high area in number of square meters per pupil, ..., you wouldn't get funding..." (Int.04)

"...for instance, the size of a classroom, if we would put in a larger classroom which I'm sure the school would very much appreciate, the chances are that when it went for funding, ...it would be cut back to the statutory minimum... *we can't really go outside the guidelines too much...*" (Int.12)

There is no legal statutory minimum but a perceived one. It is an accepted standard as a result of the budgeting system. If the budget source is the government, these 'minimum standards' tend to be followed so as to facilitate the approval processes.

6 Architects' interactions with schools and regulating bodies

In examining teachers' use of classroom space, architectural elements have been classified in two ways. The first concerns 'soft' aspects of the classroom that can be manipulated by the teacher (e.g. furniture, layout). The second concerns the 'hard' aspects of the classroom that are typically dealt with by designers and regulators (e.g. walls).

The interaction between the designer and the teacher occurs only in specific instances. The contact in the school will normally either be the head teacher or a liaison appointed by the school. There are occasions in which an individual teacher will be consulted, but that would normally be in the case of a specialist subject and most probably will be the head of the specific department, not usually the teacher that will be using the

room. It is common procedure for the architect to contact the financial client before consulting the school. The financial client can give 'free access' of communication between the architect and the school but in any occasion when major decisions have to be made, these have to go through the approval of the financial client.

The architect mediates the requirements of the school and the regulations, having to satisfy the users' needs and comply with the regulators requirements.

At the same time, the architect has to go through a series of intermediaries to reach the end user (classroom teacher). The intermediaries here can be the financial client, the head teachers or head of departments, the school governors or the approval process. There is, accordingly, the risk of a communication gap.

These intermediaries act as filters so that the architect can mediate what most teachers want without customising specifically for an individual. The result should be a flexible enough space so that the teacher can customise and adapt the setting according to his/her needs.

However, this situation may create a tension where the teacher can feel powerless in terms of direct input towards the architect.

7 Architects' understanding of the curriculum

Over the years, curriculum changes influenced the organisation of school buildings. The relationship of spaces is affected by how the different subject requirements are described in the curriculum (either through separation of subjects or interdisciplinarity).

The architect's knowledge of the curriculum can therefore influence their interpretation of the building.

"...we've got to know about school curriculum, and the methods of teaching that are now recommended by the authorities so that we can talk to them ... on a basis which is comprehensible..." (Int.13)

But regardless of the curriculum, there is always a need for flexible spaces permitting change to take place.

8 Flexibility and adaptability of space

Change is the only constant in a school setting. Teachers change, methods change, pupils change, curriculum changes, requirements change. Because change is inevitable, schools have to adapt themselves to the frequent alterations. This requires flexibility and acknowledging the need for adaptability in the design process.

"You've got to be as flexible as you can,... because things change so quickly..." (Int.12)

In this situation the architects' role is often seen as providing a shell so that different teachers can use it in different ways. The school is a physical structure that serves to provide shelter and support for educational activities.

"Classrooms are essentially a room, ... which a teacher can use in different ways..." (Int.03)

9 Conclusion

The overall analysis of the interviews with architects reveals a continuum scale of attitudes. These two extremes can be termed the 'inside-out' designer and the 'outside-in' designer. The 'inside out' designer is methodical and focuses on the practicalities in all aspects. It is the one that works from the smallest detail and then puts the information together into a whole. The 'outside in' designer constructs a big picture, often with a dominantly aesthetic priority in mind and then works towards the practicalities. The first is more concerned to get it right according to what each part wants and complying with all the regulations and guidelines, while the second wants the big picture first.

A second continuum scale was also revealed in terms of designers' attitudes. It is the 'predetermining' continuum. The extremes here occur at one end when designers predetermine as little as they can so that users have the greatest opportunity to join in the design by adapting the setting as they

want. At the other extreme are designers who try to plan precisely for everything they think will occur in the setting.

But no matter what the original designers want or expect, people who use the environments redesign them. It is an adaptive redesigning. Every teacher becomes a designer, responsible for preparing the environment to achieve his or her educational objectives. There is a tendency for specialist rooms (science labs or design and technology workshops) to be more precisely (and hence less flexibly) defined.

If the environment is predetermined, than it is clearly desirable for it to be done in close collaboration and discussion with the teacher, but teachers need to know what their role is in the process. If the environment is not predetermined and full flexibility is expected, the teacher needs to know about it, to be aware of it. It is then that the teachers can be empowered to make use of the flexibility in their own ways. If teachers are given a flexible space, the responsibility of customising it is the school's and the teachers'. They need to know what they are doing. Such environmental competence can only be achieved once people have an ability to deal with their immediate surroundings in an effective and stimulating manner. (Gifford, 1987)

No matter what the architect's intentions were, it is the teacher that has to deal with the environment. Every teacher becomes a designer taking responsibility for developing their space. What the architect provides is a 'finished beginning'. The implications of this should be recognised directly in teacher training and in teacher's professional development in terms of environmental awareness. Such awareness would enable the teacher to analyse the learning spaces more critically and become autonomous in their control over the setting.

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