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Establishing a Design Process for Museum Exhibitions

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Abstract

The field of museum exhibition development is complex and its context has expanded beyond the design discipline. Traditional museum exhibition design is being increasingly replaced by multi-disciplinary practices that involve a wide range of museum specialists, such as artists, engineers, architects, designers, curators, museum specialists, and educators.

Nowadays the role of museums has changed to become more educative, entertaining and technological. Museums have increasingly improved their reputation for adopting new ideas and updating the display of their collections. In this sense, museum exhibition designers need to draw more on communication and interpretation strategies to meet museum requirements. Designers therefore not only provide professional expertise but also transform museum objectives to public.Museum exhibition design and development generally involves a number of design disciplines and hundreds of decisions. It will be seen that every design project has to set a pattern of design specifications and communicating documents, such as the design brief. This pattern or design process is sometimes in the form of a prescriptive model and in this work is referred to as the "Museum Exhibition Design Process" or MEDP. The purpose of the study is to contribute a more complete understanding of museum exhibition design management by developing guidelines for adoption in practice.

Keywords: Museum exhibition, design process, curators and designers.

1. Aims of the study

In the past few decades museum exhibition design processes have been adapted from architectural planning. Such design processes were developed to cover the architectural aspects. As museum management becomes more sophisticated, exhibition design becomes technically more complex and specialised and a specific design process in terms of the museum context becomes increasingly important.

There have been very few theoretical or practical design and planning studies (e.g. Lord and Lord, *The Manual of Museum Planning*, 1991) relating to the development of museum exhibition design. As museum objectives and activities become more complex, museum exhibitions require design and planning of all aspects in order to demonstrate museum roles and functions efficiently. Particularly, there is growing awareness that a 'design' process is necessary to undertake museum exhibition development.

The design process has been considered as a creative method which delivers the design

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information associated with inter-disciplinary working more efficiently and productively (Yamakawa, 1997). It would be advantageous to develop some methods that can be used to achieve complex museum exhibition work as well as influence communication flow through the design process (Newton, 1995).

The aim in this research is to develop a systematic design process which allows designers and curators to cope with the complexities of multi-disciplinary design working as well as to meet curatorial requirements in the museum exhibition context.

2. Literature review

With museum design and planning, much of the previous literature is concerned with the evaluation of visitors and the effect that the exhibit had on them (Stevenson, 1993). Relatively little work has been done in the development, application or evaluation of the museum exhibition design process. The purpose of this study, therefore, is to create and examine the perceptions of the museum exhibition design process related to the current and future use of museum exhibition design practices.

As museum exhibitions need a practical approach to communicate their displays (Davies, 1999), museum exhibition design should cope with the role of museological exhibits rather than general or commercial exhibits. Museum exhibition design requires that its process fulfills both curatorial and museological demands within the museum perspective.

In current museum exhibition studies, there has been less museological developed into practical curatorial work within the historical and philosophical contexts (Roberts, 1997 cited in Knutson, 1999). Literature on museum exhibition design remains scarce, although some theoretical and practical studies have been published which focus on museum exhibition planning (Table 1).

Table 1: Previous published museum exhibition studies

Title of the study	Author	Content	Approach	Year
Exhibitions in Museums	Belcher, M.	• Exhibition of museum function, modes and types. • Exhibition policy, planning and Brief. • The exhibition environment. • The museum visitor & exhibit effectiveness.	• To provide an exhibition design method which contains various of related information necessary. • To enable the readers to understand the problem and commence work on a design solution.	1991
Museum Exhibition :Theory and Practice	Dean, D.	• The museum exhibition development process. • Audiences and learning. • Detail design of exhibition Environment. • Computers in the exhibition Environment. • Exhibition evaluation.	• To provide the interested reader with an over view of those areas where knowledge is needed to accomplish the institutional goals.	1994
The Manual of Museum Planning	Lord, G. D. & Lord, B.	• Museum planning process. • Planning analysis and consideration for Visitors. • Planning process museum Management. • Planning process for implementation and construction.	• To situate collections as the fulcrum for the planning process. • To provide the interested reader about an aspect of planning process of museum programmes.	1991
The Design of Educational Exhibits	Miles, R. S. et al.	• Planning of exhibit work. • Exhibition design process. • Educational aspects of exhibition design. • Disabled visitors.	• To develop educational purpose to applied exhibitions, and to consider visitors that provides a framework of educative component for exhibition design.	1982

Source: Adapted from Belcher, 1991; Dean, 1994; Lord and Lord, 1999; and Miles et al., 1982.

These theoretical and practical studies are concerned with museum programme planning or museum exhibition briefing. Such studies also focus on establishing a means of contextualising a range of problems associated with overall museum policy. However, these studies present a general learning approach, which is suitable for museum exhibition design training rather than design practice.

3.The purpose of exhibitions in museums

The term 'exhibition' generally reflects an image of trade fairs and organised displays of works of art, science and industry to stimulate public interest. Originally, the idea of using 'exhibitions' was to demonstrate institutions' collections through display. However, the situation has changed over the last few hundred years. Museums, commercial and industrial institutions, started to use 'exhibitions' as a special technique not only for presenting their ideas but also for upgrading the quality of their disciplines (Yahya, 1997).

Many museum researchers have sought the essence of museum exhibitions in 'actual objects' and are concerned with the role of non-verbal communication (Miles, et al., 1982). When we consider exhibitions taking place in museums, the purpose is to provide a communication environment, which can offer effective information and ideas based on museum policy.

Museum 'exhibitions' mean more than 'display'. Firstly, 'exhibition' means a physical unit that is comprised of functional or non-functional artefacts which enable the interpretation of phenomena. For example, the exhibition in the National Museum of Natural Science, Taiwan, displays many objects for presenting archaeological and historical responses to theory-based phenomena. Secondly, exhibitions mean active communication to develop a widespread appreciation and understanding of technology, culture and innovation.

Without exhibitions in museums, they would be simply places for collecting material. An exhibition provides appropriate explanations of the museum collections so that visitors can appreciate and understand them. In order to fully understand the idea of the exhibition, the fundamental theory and practice of the exhibition needs to be explored.

4. The design process for museum exhibitions

Exhibition design is one of the most complex areas of practice in design work and requires planning to meet both actual and potential demands of museum and visitors (Lord and Lord, 1999). Exhibition design involves all kinds of relevant techniques and interacts with the nature of the relevant information applied.

In particular, conducting inter-disciplinary museum exhibition projects is more complex than many other design projects. Managing museum exhibition design projects involves monitoring, planning, design, and technical problems in co-ordinating all specialist disciplines involved in decision making. Because of the diverse features of a museum exhibition, managing the project requires the active participation of different professions as well as a specific curatorial approach.

The theory of museum exhibitions and their practice, unlike many more recent professions, remains a singular design-based development (Thompson, 1986). It is essential that some useful techniques are applied to achieve museum exhibition

tasks. Particularly, the design process model for museum exhibitions consists of two separate elements: 'participants involved in the project' and 'design information flows' which are the key elements producing the design approach.

There is a growing awareness that other disciplines are necessarily interrelated and co-operate in the flow of museum exhibition design work to carry out design tasks. Undertaking the museum exhibition design process involves available and reliable information flowing between tasks at all levels. Managing design information increases success in improving and accelerating the delivery of design ideas during the design process, as well as coping with the many complexities of developing museum exhibitions. These two key elements highlight the vital importance of effective performance amongst the various participants of an exhibition project.

5. Formatting the MEDP framework

5.1 The procedure of developing the model

Formatting the MEDP framework consists of three conceptual phases to accomplish the museum exhibition objectives. Phase 1 specifies the background of the MEDP. Phase 2 defines museum exhibition design objective and the terminology that helps participants to have a clear understanding about the project. Phase 3 draws out a set of design work stages which map the activity of all participating discipline groups of the development team from different disciplines.

5.2 Outlining the design framework

Roozenburg and Eekels (1995) stated that the design process offers the basic cycle function which begins with problems and ends with problem-solving. Design process work with curatorial direction, addresses a design method, which allows the members of the development team to carry out their own duties. The MEDP framework therefore needs to emphasise specific criteria in the following stages: Project planning; (2) Feasibility study; (3) Outline proposal; (4) Design development and (5) Production.

The approach proposed that the design methodology would have the potential to be a more effective design planning technique than the linear design process was identified through consideration of a series of problems. Thus, an outline framework addresses the various stages by effectively co-ordinating the transfer of information amongst different tasks and disciplines (Figure 1).

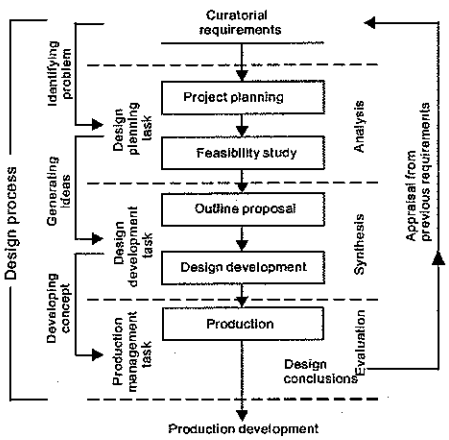

Figure 1: Outline design framework

In this outline of the design method, the main phases 'analysis', 'synthesis' and 'evaluation' parallel the tasks of 'planning', 'design' and 'production' in the MEDP phase model. The main phases of the analysis, synthesis and evaluation are the overall activity of the work stage, where the concepts of the exhibition to be designed are developed.

Based on using new design methods in exhibitions, planning and designing a museum exhibition in general has undergone changes over time (Yahya, 1997) which needs a professional approach (Davies, 1999) to carry out the design task in order to interpret the museum roles and functions.

6 Museum exhibition design process

6.1 Design Practice Guidelines

This framework for the process model has a number of properties. Its application in real practice is more complex than any model of the design process itself. The MEDP model enables participants to understand the various disciplines that are involved in the design project. In order to carry out inter-disciplinary co-ordination activities of the development team, process-users need to focus on its application within their discipline, organisation and project.

During the design development period, information (e.g. the design brief) is transferred between participants of the design team by an exchange of documents. Such information is transformed and modified and is effective in the description and analysis of exhibition design work.

6.2 Objectives

This design process framework has been developed for the 'museum exhibition design project' with special reference to the specific and additional needs of museums. It sets out in a systematic manner the activities that are normally necessary for the successful completion of the work stages in the Museum Exhibition Design Process model. The process model generates design tasks for the: The client (museum dirctor/curators); Project manager; Museum exhibition designer; Quantity surveyor; Museum specialist; and Contractor.

The process model is constructed to co-ordinate relevant disciplines and provide successful outcomes based on curatorial requirements. It is also constructed to develop a clear understanding of the museum exhibition design process and determine:

- the key activities performed by each role;
- the information flow between tasks at all levels;
- the design team needed to perform the process;
- the design stages necessary for a more efficient approach to planning; and
- the general forms of design output.

The process model represents design tasks and information dependencies in a generic manner so that the model can utilised:

- aid designers in design concept development;
- gain an appreciation of the complex interactions between members of the exhibition design development team;
- educate and inform designers about their individual design tasks by experiment; and
- indicate good design practice within a museum exhibition project.

A well-structured method is a key factor in developing an efficient and systematic process. The successful execution of multi-disciplinary design work requires co-ordination to ensure all participants are constantly aware of the progressive status of the project. The information flows in the following sections identify a methodological structure which can create good working relationships from design to production (Figure 2)

6.3 Performing the process model

A schematic approach to the design process is constructed in order that all the activities can be

clearly understood. The appropriate use of the design process during project development provides a structure for identifying and analysing museum exhibition criteria, developing design data, synthesising design solutions and evaluating design concepts. (Figure 3).

Design process information is from various sources and developed using various techniques. The information identifies ways of conducting the design project, verifying the solutions, and reflecting on the process (Figure 4).

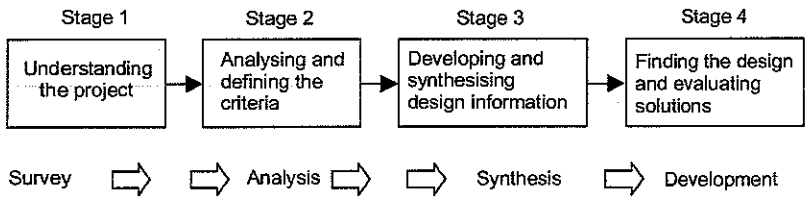

Figure 4: The use of MEDP

The procedure of employing the model should include:

understanding the project: see 'Introduction' and 'Principles of the Process Model': aims an overview of exhibition characteristics which describe its overall aims, objectives, purposes and the design tasks required.

analysing and defining the criteria: see 'Principles of the Process Model': exhibition content is described in detail with themes, specifications, and development teams identified.

developing and synthesising design information: see 'Design Practice Guidelines': collecting relevant information and confirming its accuracy in order to allow designers to think creatively and generate design concepts.

finalising designs and evaluating solutions: see 'Design Practice Guidelines' and 'Documentation': following the development of design concepts, designers proceed with detailed design work, provide production information and evaluate success.

6.4 The structure of the design framework

The framework should be developed, simplified and utilised so that all the members of the project development team can understand how to deal with problems within the project. Based on client requirements, the work stages outline all the main design activities. The descriptive explanations, flow diagrams and structure charts provide further detail.

7 Design framework

7.1 Stage A: Project planning (Table 2)

1. Aims

This stage is an overview of the exhibition project to clarify the project objectives and determine an appropriate way of progressing the project. Elements such as cost plan, specialist information and curatorial direction must be considered and discussed to verify project needs with respect to the museum context. The primary aim of the project planning stage is to explore appropriate and possible characteristics in order to launch the project and brief development participants.

2. Objectives

The objective of this stage is to prepare a general outline project plan proposal based on museum requirements, define the basic objectives

and identify the museum's role in order to plan future stages. This stage involves client, quantity surveyor, and project manager although these roles may be taken by people with different job titles. The development of new concepts will involve consideration of budget, museum theme and strategy, personnel, user requirements and site environment.

Once the client has decided on the direction of the project, the first phase of the project begins. Concept planning defines the overall goals of the museum exhibition so that surveys and analysis can define objectives, activities, constraints, and museum exhibition criteria. The objectives are:

- Launch project and brief participants;
- Develop project plan and project proposal;
- Contribute specialist information to project proposal; and
- Contribute information or project costs to project proposal.

3. Tasks

In the initial stage, the tasks identified will vary, depending upon what drives museum strategy, for example government policy, competition or existing collections. The first step is to prepare a general outline project proposal based on museum requirements, define the basic objectives and identify the museum's role in order to plan the next section. The second step is to determine the level of detail the client requires about the project's characteristics, themes and purposes, to approve the next stage of development. This stage is based on a client presentation. A preliminary project proposal will be developed and approved by the client.

The task of project planning is to set up a strategy for verifying that its objectives have been met and identifying the client's requirements in order to launch the project and appoint an appropriate development team.

Project tasks therefore should include the following items:

- establishing the overall aims and purposes of the project (project planning);
- establishing a project development team (people planning);
- establishing the principal requirements: market research, budget, working system, milestones, and datelines (cost and time planing); and
- developing specialist information and storylines in accordance with museum themes (themes planning).

Table 2: Stage A 'Project planning'

Participants	Client	Project Manager	Designers	Subject Specialists	Quantity Surveyors	Contractors
Objective	Launch project and brief participants.	Develop *Project Plan* and *Project Proposal* in preparation for stage B.		Contribute specialist information to *Project Proposal* in preparation for Stage B.	Contribute information or project costs to *Project Proposal* in preparation for stage B.	
Activities	Launch project and appoint project manager.					
	Appoint remainder of core project team.	Appoint remainder of core project team.				
	Advise on client procedure for the stage.	Commence project organisation.		Provide information for outline museological and technical development.	Provide information for outline cost control.	
	Supply *Site Information* to project manager.	Review most recent museum exhibition design project and its implications.		Advise on service availability and strategies for site, technical and museum appraisal.	Advise on cost aspects of the overall project.	
	Consider project with project manager and advise on outline development.	Prepare *Project Plan.*			Prepare initial capital cost studies and alternative options.	
	Provide initial *Statement of Museum Objectives* and budget.	Receive and evaluate initial *Statement of Museum Objectives.*		Receive and evaluate initial *Statement of Museum Objectives.*	Receive and evaluate initial *Statement of Museum Objectives.*	
	Review *Project Plan.*	Receive proposals and prepare *Project Proposal* including project plan.		Prepare and deliver proposals to project manager.	Prepare and deliver proposals to project manager.	
	Determine exhibition objectives and scope.	Set up project organisation and develop preferred management strategies.				
	Decide the need to build or refurbish.	Obtain client's approval to proceed to *Feasibility Study* stage.		Identify studies and surveys required by *Museum Objectives.*	Discuss the client's requirements about the financial set up.	
	Select designers.	Provide approved *Project Proposal* to all participants.				
	Review *Project Proposal* and approve recommendations.					

7.2 Stage B: Feasibility study

1. Aims

This stage is based on the outcomes of project planning. The aim of undertaking the feasibility study is to decide what the elements of the exhibition project and involves collecting information about them in order to assess the project's feasibility.

This stage is concerned with the analysis of the project concept set out in Stage A in order to determine the feasibility of project development. This enables all parties to use their understanding of the project concept as the basis for creating initial exhibition project work. This stage is also defined as a survey stage to determine whether a particular exhibition project or system is desirable and practicable. After the study has been completed, a design brief will be produced.

2. Objectives

Information is issued which includes project briefing, proposals, surveys, planning consent, and cost estimations. The objectives cover:

- a decision on project feasibility;
- a report on feasibility and the establishment of formal design brief ;
- the report on the exhibition feasibility of project; and
- the report on economic feasibility of project.

3. Tasks

Concepts and development planning are be discussed at this stage. After decisions on suitable project concepts, feasibility is summarised by presenting a design brief. The project manager should provide the client with an appraisal and recommendations in order to determine the form in

which the exhibition project is to proceed, ensuring that it is feasible, functionally, technically and financially. In this stage, a design brief is established to identify curatorial requirements and design aims. The feasibility report includes design, specialist and financial feasibility and approved by the client. The tasks are:

- develop alternative project concepts;
- test the feasibility of the preferred solutions;
- prepare a target outline timetable; and
- establish a cost analysis.

Table 3: Stage B 'Feasibility study'

Participants	Client	Project Manager	Designers	Subject Specialists	Quantity Surveyors	Contractors
Objective	Decide on project feasibility.	Report on feasibility of project.	Establish formal design brief and report on feasibility.	Report on exhibition requirements and feasibility.	Report on economic feasibility of project.	
Activities	Brief project development team.	Study the practical implications of the project demands.	Specify design objectives of the project.	Study the practical implications of the project demands.	Advise on cost effect of design options.	
	Advise on client procedure for the stage.	Determine the feasibility of client's requirements.	Prepare *Strategic Brief* for project manager.	Develop alternative forms in which the project can proceed.	Establish project fund-raising targets and evaluate them.	
	Receive *Feasibility Report*, discuss and consider.	Prepare preliminary implementation plan.	Collect and record information on the feasibility of the project.	Prepare *Specialist Service Plan* .	Establish *General Cost Plan* including *Project Budget*.	
	Identify target dates.	Identify target dates.	Provide *Design Cost Estimate*.	Identify research or surveys required in stage C.	Establish the overall project budget.	
	Appoint remainder of project team.	Prepare detailed *Project Plan*.	Study the practical implications of the project demands.			
	Discuss *Design Briefing Document*.	Receive *General Cost Plan*, *Specialist Service Plan*, *Briefing Document* and *Design Cost Estimate* and develop *Project Feasibility Report*.	Initiate design studies and site analyses.			
	Receive *Feasibility Report* and approve recommendations including time table, design brief, working method, project budget and contract arrangement.	Provide approved *Feasibility Report* to all participants.	Produce design options and appraisals.			
		Obtain client's approval to proceed stage B	Provide design feasibility report project manager.	Provide *Specialist Feasibility Report* to project manager.	Provide *Financial Feasibility Report* to project manager.	

7.3 Stage C: Outline proposal (Table 4)

1. Aims

In the previous stages, planning, concept development and the feasibility study were undertaken to draw up a detailed design brief for approval by the client. This stage will set out an outline design proposal. All the requirements of the design brief are outlined, such as design, specialist and financial proposals. The client must, therefore, decide between alternative Outline Design Proposals in preparation for the next stage.

The aim of the stage is to bring together detailed information layout, design and production in order to provide guidelines for design development. Such an approach should provide suitable exhibition ideas, layout, themes, environment, overall dimensions and locations.

2. Objectives

The outline proposal involves preliminary planning and design development. The creative director or manager of the design team will be responsible for the proposals to match the client's target budget and aims. The objectives of the outline proposal stage are:

- to decide on alternative outline design proposals;
- to determine the necessary resources for the

development teams;

- to plan detailed target dates, milestones and the scope of the design and development tasks; and
- to provide a general concept design and exhibition plan.

3. Tasks

Sketches and schedule will be prepared to present the designers' overall concept, and to illustrate the arrangement and layout of all exhibited elements. Formal presentations will be made to the client for approval. The project team should be certain that the proposals can be developed by the design team.

The proposals include design, outline timetable, draft cost analysis and specialist proposal regarding the exhibition objectives and purposes. In this stage client's approval to proceed to design development will be obtained.

Table 4: Stage 3 'Outlines proposal

Participants	Client	Project manager	Designers	Subject specialists	Quantity surveyors	Contractors
Objective	Decide on alternative proposals in preparation for stage D.	Provide alternative proposals in preparation for stage D.	Provide alternative design proposals in preparation for stage D.	Provide alternative specialist proposals in preparation for stage D.	Provide alternative financial proposals in preparation for stage D.	
Activities	Advise on client procedure for the stage.	Prepare and discuss alternative project proposals.	Review and evaluate the *Project Feasibility Report.*	Receive and evaluate *Project Feasibility Report.*	Receive and evaluate *Project Feasibility Report.*	
	Provide information on exhibition themes. (Curators)	Review the membership of the project team.	Prepare and discuss *Alternative Design Proposals.*	Prepare and discuss *Alternative Specialist Proposals.*	Prepare and discuss *Alternative Budget Proposals.*	
	Receive and discuss alternative proposals and advise on project plan.	Overview and co-ordinate design development throughout this stage.	Analyse and study exhibition contents.		Advise on cost aspects of project plan.	
	Overview and co-ordinate design development throughout this stage. (Curators)		Prepare *Project Brief.*	Conduct research and surveys identified in stage B.	Prepare detailed cost plan.	
	Review alternatives and approve preferred design proposals.		Prepare detail design costs.	Advise on the aspects of special subject.		
	Approve *Outline Design Proposals* and progress to Stage D.		Present *Outline Design Proposals* to project team and evaluate feedback.			
		Feedback on *Outline Design Proposals.*	Feedback on *Outline Design Proposals.*	Feedback on *Outline Design Proposals.*	Feedback on *Outline Design Proposals.*	
		Obtain client's approval to proceed to design development stage.	Prepare amended *Outline Design Proposals* and provide to all participants.	Define detailed technical and museum requirements.		
				Contribute to briefing document.		

7.4 Stage D: Design development (Table 5)

1. Aims

Design development is to prepare the design concept and decide on specific proposals with the respect to the design brief. Two design stages are included Concept design and detailed design. Concept design develops alternative concepts and sketch plans are prepared to show alternatives. Detailed design is the development a detailed set of exhibition components including the site, space, exhibits, technology applications, graphics, storyboard and products. In this stage, design drawings and specifications are prepared to obtain all approvals.

2. Objectives

Concept design is aimed at preparing a potentially workable proposition. The outcome of concept design is a specific proposal for the

exhibition and its technological requirements which will lead to a detailed design. Detailed design aims to put ideas into exhibition production. During this stage, all conceptual and development decisions should reflect exhibition objectives. The outcomes must detail all the components including materials, size, manufacturing methods, form, colour, and technological applications in sufficient detail to enable the design team to prepare information necessary for production of the exhibition and all its elements.

The objectives of the design work stage should include:

- a cost analysis of project;
- design of materials, layout, concepts, communication methods and exhibition characteristics; and
- a written design specification to supplement the drawings and production specification where appropriate.

3. Tasks

Design development consists of two main phases; concept design and detailed design.

- Concept design: a general plan for developing ideas into a coherent working proposition in terms of the overall programme and for providing fundamental information to support detailed development.
- Detailed design: design information on all exhibition components with accompanying details and technical specifications which provide the basic requirements for production design.

Table 5: Stage D: Design development

Participants	Client	Project manager	Designers	Subject Specialists	Quantity surveyors	Contractors
Objective	Approve detailed design for stage E.	Develop detailed proposal for stage E.	Develop detailed design for stage E.	Develop details for stage E.	Develop detailed cost for stage E.	Develop *Production Specification* for Stage E.
Activities	Advise on client procedure for the stage.	Review progress and design recommendations.	Carry out detail design and present to project team.	Provide all subject information to designers as necessary.	Continue to refine *Cost Plan*, advise appropriate participants of critical elements.	Respond *Outline Design Proposals* with *Expression of Interest* to project manager.
	Review on detail design drawings and advise designer on changes if required. (Curators)	Present *Outline Design Proposals* to potential contractors.	Present detail design to project team for final amendments.		Develop Production Cost Plan based on design work and integrate with *Cost Plan*.	Briefing of contractors and appropriate participants through project manager.
	Receive and approve recommendations on contractors.	Review detailed design drawings and check approvals.	Work with curators on detailed *Design Specifications*.	Co-operate with designers to develop concept and detail of exhibition content.	Co-operate with designers to develop cost-effective design.	
	Approve *Design Specifications* and seek advice on appointment of contractors from designers and project manager.	Receive *Expression of Interest* from contractors and make recommendations to client.	Prepare a set of detailed *Design Specifications* including audio-visual, visual image, site plan, material, exhibit and interactive specifications as appropriate and present to project team.			
		Present final design solutions and design report to client.				
		Brief contents and develop *Production Plan*.				
		Prepare Design Report including an indexed summary of *Design Specifications*, *Cost Plan* and *Production Plan*.				
		Discuss final design with client and obtain approvals.				

7.5 Stage E: Production (Table 6)

1. Aims

The aim of this stage is to provide sufficient information on the arrangement and assembly of the detailed parts of the production development, to enable manufacture and construction to be

successful on the best way of achieving the desired result. The production stage is the final control and correction stage for all drawings and specifications. In this stage, designers prepare the information necessary for the specific purpose of fabricating and manufacture. This includes all detailed design specification and production information for the exhibited components. In this stage, qualified contractors will be appointed to produce and erect the exhibition.

2. Objectives

Co-ordinated production information is required which includes location drawings, assembly drawings, component drawings, planning schedule and fabrication specification. Also, subject specialists have to provide final specialist details. Quantity surveyors review costs of production and refine Cost Plan in order to obtain client's approval. Objectives include:

- the appointment of approved contractors;
- a final detailed design decision for the production of the exhibition;
- specifications for exhibition components, detailed fabrication, and installation specifications; and
- production budget for all inputs to the system and for the disposal of wastes produced by the system.

3. Tasks

The purpose of providing production information is to invite contractors to submit bids. After the design is selected and approved by the client, production information is prepared. The information includes technical drawings, detailed specifications or other related formats needed to get the exhibition fabricated and built.

The detailed production information is used to build the exhibition. The tasks are:

- to prepare production information in sufficient detail to enable tenders to be obtained;
- to provide information for continuous cost checks;
- to amend production information as necessary;
- to check that the detailed design meets design requirements; and
- to obtain authority to proceed to production.

Table 6: Stage E: Production

Participants	Client	Project Manager	Designers	Subject Specialists	Quantity Surveyors	Contractors
Objective	Complete production and review and sign-off project.	Complete project to launch and review project.	Complete project to meet design objectives and review project.	Advise on production development and review project.	Complete project to approved budget and review project.	
Activities	Approve and appoint contractors with advice from project manager, designers and quantity surveyors.	Receive contractor's quotations, make recommendations and obtain approval from client.	Provide detailed information for production.	Provide detailed information for production.	Analyse and compare bids, advise client.	Submit quotations to project manager.
	Advise on client procedure for the stage.	Brief contractors on detailed *Design Specification*.	Brief contractors on detailed *Design Specification*.	Make decision on final specialist details with appropriate advice.	Continue check costs of design and production and refine *Cost Plan*.	Obtain authority to proceed with production work.
	Discuss revision to production plan where appropriate. (Curators)	Organise production by contractors and project team.	Make decisions on final design details with appropriate advice.			
		Finalise the contract, conditions of work, schedules and financial procedures.				
		Discuss revisions in *Design Specification* if necessary.	Discuss revisions in *Design Specification* if necessary.	Discuss revisions in *Design Specification* if necessary.		Discuss revised *Production Specification* if necessary.
		Make decisions on final project details with appropriate advice.	Supervise fabrication and site installation.			Provide information for cost checks as appropriate.
		Evaluate final production.				Assist Quantity Surveyor in preparation of cost plan of production.
	Launch of exhibition.	Launch of exhibition.	Launch of exhibition.	Launch of exhibition.	Launch of exhibition.	Complete production according to agreed programme.
	Receive *Project Review Report* and sign-off project.	Receive, review and prepare *Project Review Report*.	Review and report on design implications for future design projects to projectmanager.	Review and report on specialist implications for future design projects to project manager.	Review and report on cost implications for future design projects to project manager.	

The framework is essentially drawn out as a prescriptive method that indicates how the participants should work together more systematically. Such a prescriptive model depicts what activities should occur in the design process, rather than how the activities should be implemented.

8. Conclusions

Every design process model has different priorities and idealization, and it is very difficult to develop a universal definition for the term 'process model' for all possible projects of all design ranges. Therefore, it has proved necessary to define the required properties of a museum exhibition design process model. The various objectives and criteria for the proposed model were examined and it was found that the most important requirement was the necessity to capture the generic nature of museum exhibition design, in such a way that it could be used to create work that improves performance and prevents future problems.

This design process is a prescriptive model to guide designers in working systematically. The model represents an outline method of working on a general museum exhibition design project and can be adapted to the specific requirements of individual projects.

Although the conceptual stages of the MEDP model attempt to provide a systematic framework within which design activity can be managed, can considered as a checklist, describing what should be done at which stage of the design life cycle. The stages also describe the complete project life cycle from initial planning through to test, hand over and feedback all the design work necessary for achieving the purpose of the design project.

As a design model, the MEDP consists of a series of stages within which there are iterative actions. In practice the situation is more complicated than this. Many unexpected situations

may happen that are not covered by the process would yield some additional activities to reduce future problems. The model has to present a conceptual methodology which enables users to make their decisions.

Therefore, the conclusions of this study suggest that the effectiveness and the efficiency of the MEDP will be strongly influenced by the way the design process used and developed.

References

1. Belcher, M. (1991) *Exhibitions in Museums*. Leicester: Leicester University Press.
2. Davies, M. (1999) 'Wanted: Exhibitionists'. *Museums Journal*, April.
3. Dean, D. (1994) *Museum Exhibition Theory and Practice*. London: Routledge Publisher.
4. Knutson, K. L. (1999) *Hanging Emily: Exhibition Strategies and Emily Carr*. The University of British Columbia.
5. Lord, G. D. and Lord, B. (1999) *The Manual of Museum Planning*. 2nd ed. London: HMSO Publications Centre.
6. Miles, R. S. et al. (1982) *The Design of Educational Exhibits*. London: George Allen & Unwin Publishers Ltd.
7. Newton, A. J. (1995) *The Planning and Management of Detailed Building Design*. Unpublished PhD Dissertation, Loughborough: Loughborough University.Unpublished PhD Dissertation, London: The City University.
8. Roberts, L. (1997) *From Knowledge to Narrative: Educators and the Changing Museum*. Washington DC: Smithsonian Institution Press.
9. Roozenburg, N. F. M. and Eekels, J. (1995) Product Design: Fundamentals and Methods. Chichester: John Wiley & Sons Ltd.
10. Stevenson, J. B. (1993) *Long-term Impact of Interactive Science Exhibits*. Unpublished PhD Dissertation. London: University of London.
11. Thomposon, M.A. (1986), Manual of Curatorship: *A Guide to Museum Practice*, London: Butterworths.
12. Yahya, T. (1997) *Museum Learning, the Museum Visitor, the Museum Visit*. Unpublished PhD Dissertation. Leicester: University of Leicester.
13. Yamakawa, S. (1997) *The Development of a Framework for Inter-Disciplinary Building Design Working, and the Application of Intelligent Knowledge-Based System Techniques*. Unpublished PhD Dissertation, Cranfield: Cranfield University.

model. It is likely that implementation in practice

博物館展示設計流程的建構

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摘要

博物館展示領域是一項相當複雜且超越設計的學門，傳統的博物館展示設計已漸漸的被複合專業所取代，而導致各種博物館專業人員都需參與設計工作。例如藝術家、工程師、建築師、設計師、博物館員和教育家。近日來博物館已漸漸的傾向教育性、愉樂性和技術性導向。博物館也漸漸的有新觀念並也採納新意見的展示方法。因此，爲了博物館的需求，設計師需要發展出有關新型溝通與傳達策略。設計師也因此不僅提供專業素養且將博物館的主題傳達給公眾。

博物館展示設計參與許多專業學門和介入許多決策，必須要有一系統的設計法規模式。此種模式乃是一種規格化，於本研究中稱爲「博物館展示設計流程」。本研究主要在呈現一個能令人理解的博物館展示設計流程的規範，以供實務之用。

關鍵詞：*博物館展示，設計流程、博物館員、設計師。*