

# Unit 80: Stage Model Making

<b>Unit code:</b>	<b>H/502/5654</b>
<b>QCF Level 3:</b>	<b>BTEC National</b>
<b>Credit value:</b>	<b>10</b>
<b>Guided learning hours:</b>	<b>60</b>

## ● Aim and purpose

The aim of this unit is to develop learners' scale model-making skills. Learners will be able to create and decorate a scale model box that communicates the detail of the design intentions.

## ● Unit introduction

The model maker plays an important role in communicating design ideas with absolute accuracy through scale models. The effective model maker works methodically and with careful attention to detail as accuracy is of paramount importance. The completed scale model box will be one of the communication tools used by the construction team to inform the building of the set.

An effective model maker has an experimental approach to solving the problems of representing the design ideas in a scale model box; this knowledge is developed with each new model-making assignment. The experienced model maker is able to use and manipulate scale model-making tools, materials and construction methods effectively.

This unit will introduce and develop the skills to enable learners to communicate the scale representation of design ideas accurately in the 3D model box. This unit will develop the rigour and processes that are essential for the development of successful model-making skills. This unit will teach the accurate use of scale in 2D ground plans and technical drawings and 3D model boxes and scale set designs.

This unit provides links with a range of other units for learners following a technical pathway and has direct links with *Stage Design for Performance*, *Scenic Construction for the Stage*, and *Design Materials and Process*.

## ● Learning outcomes

**On completion of this unit a learner should:**

- 1 Know how to use technical model-making skills
- 2 Know how to select and use appropriate model-making materials
- 3 Be able to construct a scale set design in a scale model box
- 4 Be able to use decorative finishes on the scale model box.

# Unit content

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## 1 Know how to use technical model-making skills

*Scale:* using a range of scales including 1:100, 1:50, 1:25, 1:10; ability to use and draw scale ground plans; elevations; technical drawings

*Tools:* eg pencils, pens, scale rulers, rulers, set squares, compasses, protractors, cutting knives, scissors, cutting mats, hacksaws

*Cutting and joining skills:* eg scalpel, craft knives, scissors, hacksaw, glues, reinforcement methods

## 2 Know how to select and use appropriate model-making materials

*Construction materials:* eg card, paper, hardboard, plywood, wire, wood, balsa, thin sheet metal

*Joining mediums:* eg contact adhesive, PVA, Copydex™, glue gun, masking tape, balsa glue

*Decorative finishes:* eg developing an experimental approach to achieve the desired effect, eg tissue paper, pencils, pens, paints (poster, acrylic, gouache), Polyfilla, lollysticks, sawdust, wire, balsa, fabric

## 3 Be able to construct a scale set design in a scale model box

*Scale:* ability to work accurately in scales; measuring skills

*Model box construction:* interpreting plans and elevations; ability to select and use appropriate tools; accuracy of measuring drawing and cuttings; use of joining mediums, sturdiness of model; final model used as an accurate tool to inform set build/communicate set design ideas

*Model-making process:* planning; using scale ground plans; measuring; cutting; skills learnt; use of correct terminology, construction process

*Communicating design ideas:* eg use of levels, use of colour, use of decorative finishes, ability of model to demonstrate how scene changes will be carried out

*Health and safety:* safe use of cutting tools; Control of Substances Hazardous to Health (COSHH); assessment of materials; safe organisation and use of work station

## 4 Be able to use decorative finishes on the scale model box

*Applying decorative finishes:* painting; texturing; developing an experimental approach to achieve the desired effect, eg tissue paper, pencils, pens, paints (poster, acrylic, gouache), polyfilla, lollysticks, sawdust, wire, balsa, fabric

*Health and safety:* safe use of cutting tools; Control of Substances Hazardous to Health (COSHH); assessment of materials; safe organisation and use of workstation

## Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
<b>P1</b> describe how scale measuring and cutting skills should be used [IE, RL]	<b>M1</b> explain how to use scale measuring and cutting skills	<b>D1</b> offer a critical analysis of how to use scale measuring and cutting skills
<b>P2</b> describe how to select and use some scale model-making materials [IE, RL]	<b>M2</b> explain with detail the application and use of scale model-making materials	<b>D2</b> offer a fully detailed evaluation of the application and use of scale model-making materials
<b>P3</b> use measuring and cutting skills with some accuracy to construct a scale model box [CT, RL]	<b>M3</b> competently use measuring and cutting skills to construct a carefully cut and mostly accurate and robust scale model box	<b>D3</b> competently use accomplished measuring and cutting skills to construct a carefully cut and entirely accurate and robust scale model box
<b>P4</b> decorate the scale model box with decorative finishes that echo the design intentions. [CT, RL]	<b>M4</b> creatively use appropriate decorative finishes carefully to realise most of the design intentions.	<b>D4</b> creatively use completely appropriate decorative finishes to thoroughly reproduce all aspects of the design intentions.

**PLTS:** This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

## Essential guidance for tutors

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### Delivery

Learners will be taught to select appropriate materials and develop the practical skills, techniques and processes that a model maker will use to complete an accurate scale model box. The intention is that the model box will successfully communicate the design intentions and be useful as a reference tool for the design meetings and set construction process. Model-making skills take time to perfect; therefore it is important that the delivery enables as much practical developmental work as possible.

Work for this unit will develop learners' understanding of how to use a range of measuring, cutting and joining methods and model-making materials that are used in the model box construction process. Learners will explore how to use the model-making finishes to apply detail to the final scale model box to communicate the design ideas.

Learners will also apply the skills developed in this unit to complete a scale model box. They will be expected to demonstrate the ability to read and use a scale ground plan and elevations and use materials and techniques to create and decorate the scale set model. Assessment will be through practical demonstration, the completed product, and informed by learners' reflection, witness observation and tutor observation.

The application of effective health and safety is essential for the model maker and must be emphasised throughout this unit. Learners must consistently demonstrate good health and safety practice in every aspect of their model-making work.

The first workshops in this unit will introduce model-making materials and techniques. At this point it would be valuable to have examples of a range of model boxes to inspire and inform learners it important that they are given the opportunity to experiment with using different materials, model-making tools and techniques and to discuss and reflect on their experiences and understanding. Learners will also be introduced to information formats such as scale ground plans and elevations and taught how to use them. Health and safety considerations for model making must also be fully considered.

Subsequent workshops will give learners the opportunity to develop their model-making skills through small practical model-making tasks. It is important that time is taken to teach and develop accurate and careful model-making techniques and approaches. This is the part of the unit in which learners begin to develop confident manipulation of tools, materials and processes that will enable them to select and develop suitable model-making skills and techniques that they will be able to use later in the unit for the creation of a model box. Planning for the delivery of this unit must be encompass the need for a practical experiential approach that may present resource implications for materials, time and workshop space.

Learners will use the skills and understanding developed through the previous exploratory processes to read a scale groundplan and elevation and produce and decorate a final scale model box. This is a short project in which there is focused guidance and much discussion and interim feedback between the tutor and learners. If they are not the designer this process will be informed by dialogue with the director or choreographer to ensure that the model box accurately represents the design intentions.

This process is then repeated using skills developed and lessons learnt from the previous assignment. This project will be a longer process and will offer learners the opportunity to demonstrate their expertise, use of scale, measuring and cutting skills, selection of model-making materials, appropriate use of decorative finishes and accurate joining materials and processes. This final process will also use interim assessment.

Assessment will include; the suitability and standard of the final product, the use of peer or tutor witness statements, annotated photographs of the process and learners reflection on the process and final product.

## Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
<p>Introduction to the unit and the structure of the programme, tutor-led whole class. Assignment introduction.</p>
<p><b>Assignment 1: Cutting Edge – P1, M1, D1, P2, M2, D2</b></p> <p>Learners are introduced to model-making materials and construction skills. This will be through practical sessions. This will require time to develop learners' knowledge and confidence with the model-making materials and processes.</p> <p>This will include the study of.</p> <ul style="list-style-type: none"><li>• measuring skills</li><li>• cutting skills</li><li>• model-making materials</li><li>• decorative finishes</li><li>• the use of scale</li><li>• joining skills.</li></ul>
<p><b>Assignment 2 and 3: In Scale – P3, M3, D3</b></p> <p>Learners apply their model-making skills in the creation of a scale model. Learners will work from scale groundplans and construction drawings. It is important that learners apply careful and consistent model-making skills throughout the process. Learners then apply the skills to the creation of a scale model box. Learners are guided through the process for assignment 2 by their tutor.</p> <p>This assignment will be repeated in assignment 3 so that the learner can make a model for a different performance space and will be able to manage the process more independently.</p>
<p><b>Assignment 4: The Final Stage – P3, M3, D3, P4, M4, D4</b></p> <p>Learners will be taught the procedures and approaches that a model maker can use to decorate the scale model box.</p> <p>Learners will apply the skills learnt to decorate the scale model box, the model maker will be working to the designers guidance sheets.</p>

## Assessment

It is important that the assessment of this unit focuses on the model-making process and does not assess the design content. Learners will demonstrate the ability to read, use and interpret scale ground plans and construction drawings. Assessment decisions will be informed by the accuracy of the measuring as evidenced in the scale model pieces. The importance of health and safety is implicit and must be emphasised throughout this unit; therefore description of and reflection on health and safety should feature in all work produced for assessment. Good health and safety practice can also be recorded to support assessment sessions by peer observation or witness statements.

To achieve learning outcome 1 learners' response to the exploration and the use of model-making tools and techniques can be recorded through the tutors witness statement and peer observation of the practical work. The exploration of tools and techniques should be investigated individually. It is important that learners make personal comment on the success of their exploration of the process that they have experimented with; this could be evidenced through a workbook or a journal, through a *viva* or a presentation. Learners' understanding could also be evidenced through structured questioning in the *viva voce*. Learners' application of health and safety could be evidenced through tutor monitoring, observation and learners' reflection.

To achieve learning outcome 2 learners will evidence their understanding of mode-making materials. The exploration of materials should be undertaken individually. It is important that learners make personal comment on the success of their exploration of the process that they have experimented with; this could be evidenced through a workbook or a journal, through a *viva* or a presentation. Learners response to the exploration and the use of model-making materials can also be recorded through the tutor's witness statement and peer observation of the practical work. Learners' understanding could also be evidenced through structured questioning in the *viva voce*. Learners' application of health and safety could be evidenced through tutor monitoring, observation and learners' reflection.

To achieve learning outcome 3 learners will evidence their application of the model-making tools, materials and techniques to create a scale model box. Learners will demonstrate their ability to read and interpret scale groundplans and elevations. Learners will also show attention to detail, the proficient use of cutting tools and the ability to select and use effective joining skills in their manipulation of tools and materials and techniques. It is important that learners make personal comment on the success of their exploration; this will be evidenced through a workbook, a journal or a presentation. Learners will show the development of their skills through the two assignments. Tutor witness statement, or structured questioning in the *viva voce* will also be suitable assessment evidence. Learners' application of health and safety could be evidenced through tutor monitoring, observation and learners' reflection.

Work for learning outcome 4 will refer to the model box decoration skills taught at the beginning of the unit. Learners will show an understanding of how to achieve the desired effects; in some instances this will mean using established practice, in other cases learners will have to experiment in order to achieve the desired scale effect. Learners will describe and reflect on the process through notes, photographs and log books. Tutor witness statement will also be suitable evidence to support assessment decisions. Learners' application of health and safety could be evidenced through tutor monitoring, observation and learners' reflection. Learners' understanding could also be evidenced through structured questioning in the *viva voce*.

To achieve PI, learners must be able to demonstrate that they understand how to use scale measuring and cutting skills. Practical work will show some control of scale cutting and measuring skills. Notes, diagrams and sketches will include images and photographs which have some simple annotations that show a grasp of the underlying principles and practices. Notes will show little development of learners' first statements and ideas.

At merit level learners will be able to demonstrate some successful exploration of scale measuring and cutting skills. To achieve M1 learners must be able to show and explain different scale measuring and cutting skills. Practical work will show a competent understanding of how to use scale and the controlled use of measuring and cutting skills; the practical work will also show an understanding of the potential and the limitations of the processes; work will also show an understanding of the suitable use of techniques for different materials. The explanation of the measuring and cutting skills will be detailed in places; the work will contain some detailed images and photographs. Learners' work will show a reasonable understanding of the work completed. Learners will also explain their understanding in written notes, sketches and photographs that have some accurate detailed information. Annotations on the images will be considered and mostly accurate.

Distinction level work will be characterised by creative exploration and application of scale measuring and cutting skills. To achieve D1 learners must be able to analyse different scale measuring and cutting skills critically; recognising the potential for their use and application. Practical work will show an accurate control of scale measuring and cutting skills and show a critical understanding of the potential and the limitations of the processes; work will show detailed understanding of the appropriate use of suitable skills for different materials. The explanation of the measuring will be fully explained with insight and relevance and will contain fully-detailed images and photographs. Learners' work will show a wholly informed understanding of the work completed. Learners will also communicate their detailed and wholly considered understanding in written notes, sketches and photographs. Annotations on the images will be wholly informed and accurate. Learners' practical work will show that they fully appreciate the limitations and potential of the scale model-making processes. Annotations on the images will be insightful, considered and accurate.

To achieve P2, learners must be able to demonstrate that they understand how to use scale model-making materials. Practical work will show some understanding of the properties of the materials. Notes, diagrams and sketches will include images and photographs which has some simple annotations. Notes will show little development of learners' first statements and ideas.

At merit level learners will be able to demonstrate some successful exploration of scale model-making materials. To achieve M2 learners must be able to show and explain the use and effect of different scale model-making materials. Practical work will show a competent and controlled use of the scale model-making materials and an understanding of the potential and their limitations. The explanation of the model-making materials will contain some detailed images and photographs. Learners' work will show a good understanding of the work completed. Learners will also explain their understanding in considered and mostly accurate written notes, sketches and photographs. Annotations on the images will be considered and mostly accurate.

Distinction level learners will be able to demonstrate some a wholly successful exploration of scale model-making materials. To achieve D2 learners must be able to evaluate the use of different scale model-making materials critically. Practical work will show a detailed and informed understanding of the wholly appropriate use of scale model-making materials; the practical work will also show a fully detailed understanding of the potential and the limitations of the materials. The critical analysis of the model-making materials will contain some detailed images and photographs. Learners' work will show a fully informed understanding of the work completed. Learners will be able to analyse their understanding critically in accurate and detailed written notes, sketches and photographs. Annotations on the images will be full, informed and wholly accurate.

To achieve P3 learners must be able to show that they can choose and use mask making materials, processes and techniques. This criterion is assessed through tutor observation and learners' reflection. Learners will be assessed on their ability to complete practical scale model-making tasks. Learners will be able to construct a scale model box. The final product will be accurate in places, it will communicate the basics of the designer's intentions and be useable with some minor alterations. Pass learners will keep a brief record of their experience of the process, this may include, plans, notes, diagrams and photographs.

Merit level work will be characterised by capable selection and creative application of scale model-making materials, techniques and processes to create a useable scale model box which accurately communicates the designer's intentions in some detail. To achieve M3 learners will be able to use selected materials and processes with some confidence and be able to demonstrate some level of skills. Learners' practical work will show that they have learnt, understood and are capable of applying scale model-making materials techniques and processes with some success. Merit learners will support the practical work with a detailed account of the process and decoration techniques; their notes will include some observations which explain how they are applying the skills that they have learnt. Their work will include some insightful reflection on their experience of the process.

Distinction level work will be characterised by skilful, controlled selection and application of practical scale model-making materials, techniques and processes. To achieve D3, learners will produce a wholly accurate scale model box that entirely communicates the design intentions. The box will be accurately detailed and will be constructed from entirely suitable materials. The box will be robust. Evaluations will be fully considered, detailing their experience of scale model-making materials and processes. Learners' reflection will show a fully justified understanding of how the skills that they have learnt have been applied.

To achieve P4, learners will demonstrate some practical command and understanding of scale model box decoration techniques in the decoration of their model box. The work will show an understanding of how to achieve some decorative effects; however learners will show little evidence of experimentation and techniques will not be consistently applied. The model box will communicate the general idea of the design intentions but the box will lack specific detail. Learners will describe the process in their account of the process.

.Merit level work will be characterised by thoughtful application and some successful command of scale model box decoration techniques. To achieve M3, learners will use established practices with some confidence and the work will show a considered understanding of how to achieve some decorative effects. Learners will show some evidence of experimentation to achieve the desired final effect. The model box will communicate the design intentions but the box will contain some specific detail. Learners will describe the process that they use and their reflection will draw some informed conclusions. There will be some detail in the explanation of the design decoration process, materials. Reflections will be make some informed observations which consider how the skills learnt can be applied. The work will include relevant images, photographs and diagrams which have considered annotations.

Distinction level work will be characterised by confident and skilful command of the scale model box decoration techniques. To achieve D4 learners will confidently use established practices; the work will show a fully informed understanding of how to successfully achieve convincing and appropriate decorative effects. Learners will use experimentation to discover and apply the most appropriate desired final effect. The model box will communicate the full detail of the design intentions. Learners' reflection will draw fully-informed and considered conclusions. Descriptions of each the decorative process and materials used will be fully detailed and draw wholly appropriate conclusions and observations that discuss how the skills that they have learnt can be applied. The work will include relevant images, photographs and diagrams which have informed annotations.

## Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, D1 P2, M2, D2	Cutting Edge	Learners are introduced to model-making materials and construction skills in practical workshops. This will be a developmental assignment which includes interim assessment points to inform and improve practice. Skills learnt will include: <ul style="list-style-type: none"> <li>• measuring skills</li> <li>• cutting skills</li> <li>• model-making materials</li> <li>• decorative finishes</li> <li>• the use of scale</li> <li>• the use of plans</li> <li>• construction and joining skills.</li> </ul>	Many interim assessment points through which the learners demonstrate the model-making skills that they have learnt developed and applied.
P3, M3, D3	In Scale	Learners will apply their model-making skills to create a scale model box working from groundplans and elevations. This is a short assignment that is really a chance to refine skills for the next assignment.	Assessment of the final model box, learner reflection on the process and question and answer session with the learner and the tutor.
P3, M3, D3 P4, M4, D4	The Final Stage	This assignment targets the same criteria as the previous assignment. This is the final opportunity to demonstrate skills and understanding in the completion of a scale model box which includes the performance space and the set design. When the learner has constructed the model box they will apply decorative techniques to realise the colour, texture and detail that are in line with the designer's intentions.	Interim assessment of the completed scale model before decoration. (Assessment of 3.1)  Summative assessment of the final model box; presentation of the final box to the tutor learner reflection on the process.

## Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Performing and Production Arts sector suite. This unit has particular links with the following unit titles in the BTEC Performing and Production Arts suite:

Level 1	Level 2	Level 3
Exploring Design Skills for the Performing Arts	Design for Performance	Scenic Painting
	Set Construction	Scenic Construction for the Stage
		Stage Design for Performance

This unit also has links with the following National Occupational Standards:

Technical Theatre

- CPD1 – Improving your skills
- CPD2a – TP Keeping up to date with technical and production developments in the live arts
- CPD4a – Contributing to technical production work for performance
- HSI – Working safely
- TP2.5a – Contribute to the interpretation of designs for sets or props
- TP2.5c – Ensure accurate interpretation of designs for sets or props
- TP2.5b – Interpreting designs for sets or props.

### Essential resources

This unit requires a suitably equipped workshop space and materials. It is important that learners can work in a clean, dry design space as their cutting and measuring tools and work in progress must be kept clean. The teaching space should be resourced with a range of model-making construction, joining and decoration materials.

Learners will also require model box storage space. Access to examples of good practice that show a range of techniques and materials would be a valuable resource.

### Employer engagement and vocational contexts

A site visit to a set model design exhibition, museums, a design school, a company which produces set models or even an architect's office would be useful to enable learners to see what can be achieved.

## Indicative reading for learners

### Textbooks

Carnaby A J – *A Guidebook for Creating Three Dimensional Theatre Art* (Greenwood Press, 1997)  
ISBN 9780435070007

Orton K – *Model Making for the Stage: A Practical Guide* (Crowood Press, 2004) ISBN 9781861266903

## Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
<b>Independent enquirers</b>	developing a knowledge and understanding of model-making materials, resources and process
<b>Creative thinkers</b>	using and applying model-making materials, resources and process
<b>Reflective learners</b>	reflecting on the use and development of the model-making materials and processes.

## ● Functional Skills – Level 2

Skill	When learners are ...
<b>Mathematics</b>	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	working with scale
Identify the situation or problem and the mathematical methods needed to tackle it	taking measurements
Select and apply a range of skills to find solutions	creating scale models
Use appropriate checking procedures and evaluate their effectiveness at each stage	checking measurements
<b>English</b>	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	communicating design ideas
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	referring to health and safety guidelines.