

Getting Started Guide



GCSE (9-1) Design and Technology

Pearson Edexcel Level 1/Level 2 GCSE (9-1) in Design and Technology (1DT0)

Getting Started: Design and Technology GCSE (9–1)

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1. Introduction

The GCSE in Design and Technology enables students to understand and apply iterative design processes through which they explore, create and evaluate a range of outcomes. The qualification enables students to use creativity and imagination to design and make prototypes (together with evidence of modelling to develop and prove product concept and function) that solve real and relevant problems, considering their own and others' needs, wants and values. It gives students opportunities to apply knowledge from other disciplines, including mathematics, science, art and design, computing and the humanities.

Students will acquire subject knowledge in Design and Technology that builds on Key Stage 3, incorporating knowledge and understanding of different materials and manufacturing processes in order to design and make, with confidence, prototypes in response to issues, needs, problems and opportunities. Students learn how to take design risks, helping them to become resourceful, innovative and enterprising citizens. They should develop an awareness of practices from the creative, engineering and manufacturing industries. Through the critique of the outcomes of design and technology activity, both historic and present day, students should develop an understanding of its impact on daily life and the wider world and understand that high-quality design and technology is important to the creativity, culture, sustainability, wealth and wellbeing of the nation and the global community.

In the context of this document, the term 'prototype' refers to a functioning design outcome. A final prototype could be a highly-finished product, made as proof of concept before manufacture, or working scale models of a system where a full-size product would be impractical.

This Getting Started guide provides an overview of the new GCSE specification, to help you get to grips with the changes to content and assessment, and to help you understand what these mean for you and your students.

We will be providing a package of support to help you plan and implement the new specification.

- **Plan:** In addition to the section in this guide, there is a Course Planner/Outline Schemes of Work for both 2 year and 3 year courses. These are not meant to be prescriptive, therefore are available in Word so that you can adapt to suit your department, specialisms and resources.
- **Teach:** There will be exemplar materials that you will be able to use with your students.
- **Track and Assess:** In addition to the Sample Assessment Materials there will be an additional set of exemplar papers created that you will be able to use for a Mock examination.
- **Develop:** There will be Getting Ready to Teach face to face and online training, specific events targeting the NEA in terms of delivery and assessment, as well as Feedback events after the first assessment in 2019.

These support documents will be available on the GCSE 2017 Design and Technology pages.

2. What's changed?

2.1 What are the changes to the GCSE qualification?

The different endorsed routes previously available in Design and Technology (Resistant Materials, Textiles Technology, Systems and Control and Graphic Products) have been removed, combining all material areas into a single Design and Technology qualification.

The new course is made up of two components; a single paper and a single non-examined assessment (NEA) task. The NEA tasks take the form of 'contexts' and are set each year by the awarding body. For Edexcel these will be released in June annually.

The weighting of the NEA has been reduced to 50%, from the current 60%, which now gives an equal split between the examined component and the NEA.

There is also a change to the grading system, with grades 9-1 replacing the current A*-G.

Maths skills now contribute to the overall qualification and since Maths cannot be assessed in the NEA it will be all examined in the paper, representing a total of 15% of the total paper marks.

There are now four Assessment Objectives (previously three) to allow for an increased focus on analysis and evaluation.

Changes to Design Technology content requirements

The content requirements for GCSE Design Technology have been revised. All awarding organisations' specifications for GCSE Design Technology must meet these criteria.

The new subject criteria have been split into two sections; Technical principles and Designing and Making principles. Students must study a range of material areas; electronic and mechanical systems, papers and boards, natural and manufactured timbers, ferrous and non-ferrous metals, thermoforming and thermosetting polymers and natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles. In addition, when designing and making, students should develop an in-depth knowledge and understanding of one of the material categories given above.

Changes to Assessment Objectives

The GCSE Design and Technology Assessment Objectives have been revised as shown below.

AO1	Identify, investigate and outline design possibilities to address needs and wants.	10%
AO2	Design and make prototypes that are fit for purpose.	30%
AO3	Analyse and evaluate: <ul style="list-style-type: none">Design decisions and outcomes, including for prototypes made by themselves and othersWider issues in design and technology	20%
AO4	Demonstrate and apply knowledge and understanding of: <ul style="list-style-type: none">Technical principlesDesigning and making principles	40%

2.2 Changes to the specification

Constructing a coherent course

This specification features a core element to the qualification. The optionality is within the material area which requires students to develop an in-depth knowledge and understanding of one of the material categories given.

The examined component is made up from the core element of the specification which accounts for 40% of the overall exam paper, with the remaining 60% coming from the specialist area.

Changes to specification content

As already stated, the specification is now made up from two distinct parts; a core and a specialist area from one of the materials area groups. These changes have come about as a result of changes to the subject criteria published by DfE.

Changes have also been made as a result of feedback from all parts of the design and technology subject community, including teachers, subject associations, professional bodies and higher education. We have used this opportunity of curriculum change to redesign a qualification that is engaging and inspiring, and that reflects the demands of a truly modern and evolving society – a qualification that enables your students to apply themselves and develop the practical skills needed to succeed in their chosen pathway.

There is some overlap between the new (2017) specification and the legacy (2014) specifications from the various optional endorsed routes. Details of the overlap can be found in the mapping documents available on the GCSE 2017 Design and Technology pages.

2. What's changed?

Changes to assessment

Content and assessment overview

The Pearson Edexcel Level 1/Level 2 GCSE (9–1) in Design and Technology consists of one externally-examined paper and one non-examined assessment component.

Students must complete all assessment in May/June in any single year.

Component 1 (*Paper code: 1DT0/1A, 1B, 1C, 1D, 1E, 1F)
Written examination: 1 hour and 45 minutes 50% of the qualification
100 marks
Content overview
1 – Core content and any one from the following material categories: 2 – Metals 3 – Papers and boards 4 – Polymers 5 – Systems 6 – Textiles 7 – Timbers
Assessment overview
The paper consists of two sections. Section A is assessed on the core content and Section B is assessed on the material category students have chosen. 1DT0/1A – Metals, 1DT0/1B – Papers and boards, 1DT0/1C – Polymers, 1DT0/1D – Systems, 1DT0/1E – Textiles, 1DT0/1F – Timbers
Section A: Core
This section is 40 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 10 marks of calculation questions in Section A.
Section B: Material categories
This section is 60 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 5 marks of calculation questions in Section B.
Calculators may be used in the examination.

2. What's changed?

Component 2 (Paper code: 1DT0/02)
Non-examined assessment 50% of the qualification 100 marks
Content overview
There are four parts to the assessment:
1 – Investigate
This includes investigation of needs and research and a product specification.
2 – Design
This includes producing different design ideas, review of initial ideas, development of design ideas into a chosen design, communication of design ideas and review of the chosen design.
3 – Make
This includes manufacture and quality and accuracy.
4 – Evaluate
This includes testing and evaluation.
Assessment overview
<ul style="list-style-type: none">Students will undertake a project based on a contextual challenge released by us a year before certification.This will be released on 1 June and will be available on our website.The project will test students' skills in investigating, designing, making and evaluating a prototype of a product.Task will be internally assessed and externally moderated.The marks are awarded for each part as follows. <ul style="list-style-type: none">1 – Investigate (16 marks)2 – Design (42 marks)3 – Make (36 marks)4 – Evaluate (6 marks)

3. Planning

3.1 Planning and delivering a linear course

There are various models that could be adopted to deliver the qualification. They will depend on your own specific circumstances with your own centre, in terms of which of the material(s) categories you aim to follow and the resources you have available.

In the first year, students can be taught much of the content and they can spend some time developing their design skills through smaller tasks. The contextual challenges will be published annually in June, at which point students can start to work on their NEA in response to the specific context they have selected.

Sufficient time will need to be left towards the end of Year 11 for revision.

3.2 Suggested resources

There will be a number of resources to help plan for the teaching of this course and to help your students.

These resources will include:

- a Course Planner/Outline Schemes of Work to help plan and to save you time
- exemplars of assessed work which will show clearly what is required
- additional specimen papers which will help student exam preparation
- a new student text book specifically for Edexcel (9-1) Design and Technology.

3.3 Delivery models

There is a Course Planner/Outline Scheme of Work for both a two year delivery model and a three year delivery model. These are not prescriptive and centres may amend/adapt these to suit their centre and students.

4. Content guidance

There have been many changes made to the content of the legacy specifications to this new specification, given that there are no longer any endorsed routes. As such, and in response to the Dfe subject criteria, there have been a number of changes.

There is a core element of the specification which all candidates have to study. This ensures that all candidates study a range of topics and material areas. This core component is tested on the examination paper with a series of questions worth a total of 40 marks.

The remainder of the content has been split up into the various specialist materials areas. Candidates have to study one of these material areas in depth in relation to the content specified. This specialist area makes up the remaining 60 marks on the paper.

A mapping document has been provided to show what content from the old legacy specifications appears in the new specification.

5. Assessment guidance

5.1 Implications of linear assessment

All assessment is to take place in the final year as a terminal examination. The contextual challenges for the NEA will be published annually in June for submission the following year when the examination must also be taken.

5.2 AOs and skills targeted by component

Students must:		% in GCSE
AO1	Identify, investigate and outline design possibilities to address needs and wants.	10
AO2	Design and make prototypes that are fit for purpose.	30
AO3	Analyse and evaluate: <ul style="list-style-type: none"> • design decisions and outcomes, including for prototypes made by themselves and others • wider issues in design and technology 	20
AO4	Demonstrate and apply knowledge and understanding of: <ul style="list-style-type: none"> • technical principles • designing and making principles 	40
Total		100%

5.3 Breakdown of Assessment Objectives

Component	Assessment Objectives				Total for all Assessment Objectives
	AO1 %	AO2 %	AO3 %	AO4 %	
Component 1	0	0	10	40	50%
Component 2	10	30	10	0	50%
Total for GCSE	10%	30%	20%	40%	100%

5.4 Assessment Information

- First assessment: summer 2019.
- The assessment is 1 hour and 45 minutes.
- There are two sections to the paper: Section A – Core content and Section B – either Metals, Papers and Boards, Polymers, Systems, Textiles or Timbers.
- Section A – students must answer all questions. This section has four questions with a total of 40 marks.
- Section B – students must answer all questions. This section has four questions with a total of 60 marks.
- Each question is set in a context.
- The paper will include open-response, graphical, calculations and extended-open-response questions.
- The paper will include questions that target mathematics.
- Calculators may be used in the examination. Information regarding the use of calculators during the examinations for this qualification can be found in the specification: *Appendix 2: Calculators*.

5.5 Non-examination assessment

Overview

The NEA is worth 50% of the overall qualification. The task for the NEA, the Contextual Challenge, will be published annually in June on the Pearson website. The NEA must be submitted at the end of Year 11 and the examination must also be taken in the same academic year.

Choosing a contextual challenge

Pearson will release the contextual challenges to centres in June of the calendar year preceding the year in which the qualification is to be awarded. Students will be expected to select one of the challenges and undertake a small-scale project in response to this realistic contextual challenge, taking into account the needs and wants of the user.

Supporting students

Teachers

Can:

- provide broad parameters for students' design contexts (including areas for investigation, availability of equipment, time constraints)
- explain what a commercial design methodology is
- advise on health and safety considerations, the use of equipment and potential ethical concerns of certain types of materials
- discuss with students their initial design problems and students' initial approaches to solve the problems.

Must:

- confirm that the project has the potential to meet the assessment criteria and offer general guidance on any necessary amendments
- review each student's design brief to ensure that the proposed design brief can suitably access the specification requirements and give general guidance on the methodology and design tools that the student plans to use
- promote good practice such as referencing and using a bibliography system
- store work securely once it is handed in for formal assessment
- ensure that students keep photographic records of the manufacturing process to evidence the quality of manufacturing
- give students guidance on the safe use of unfamiliar tools and equipment.

Must not:

- give students a choice of titles or tasks to choose from
- give detailed feedback to individual students about how to improve work to meet the assessment criteria. The guidance provided before final submission should enable students only to take the initiative in making amendments, rather than detailing what amendments should be made. This means that teachers must not provide templates and model answers for the work of specific students
- mark work provisionally and share that mark so that students may then improve it
- return work to students after it has been submitted and marked
- give guidance on how to make improvements to the portfolio in order to meet the assessment criteria so that students are no longer engaged in independent learning.

Marking guidance

If teachers give any assistance which goes beyond general advice, they must then record this assistance in the CAB and take it into account when marking the work. For example:

- providing detailed specific guidance on how to improve design ideas to meet the assessment criteria
- giving detailed specific guidance on errors and omissions that limits a student's opportunity to show initiative themselves
- intervening personally to improve the presentation, manufacture or content of work. Learning hours are not specified because the process of producing the

5. Assessment guidance

design portfolio is iterative and the undertaken prototype is manufactured under immediate guidance in school/college. Where specialist processes or equipment are required beyond the school/college capabilities they may be utilised, but this must be documented and authenticated in the appropriate section of the *Pearson Edexcel Level 1/Level 2 GCSE (9–1) in Design and Technology Candidate Assessment Booklet (CAB)*. Annotation should be used to explain how marks were applied in the context of the additional assistance given. If teachers give specific guidance that goes beyond general guidance and do not take it into account when marking the work, this will be considered as malpractice. If malpractice is suspected, the awarding organisation will investigate. If malpractice is found to have taken place, a penalty will be applied dependent on the circumstances and severity of the malpractice.

For full information regarding malpractice please see the JCQ document *Suspected Malpractice in Examinations and Assessments*.

Once work has been submitted for marking it may not be given back to students. Teachers should mark the project using the assessment criteria on the following pages.

Teachers may annotate students' work but should also include comments on the CAB to justify the marks awarded.

Where marking has been carried out by more than one teacher in a centre, there must be a process of internal standardisation carried out to ensure that there is a consistent application of the assessment criteria.

Moderation process

Marks awarded by the centre will be subject to external moderation by Pearson. Moderation will ensure consistency with national standards. Pearson will notify centres of the students whose work has been selected for moderation. This sample will take cohort size into account.

The portfolio and CAB for each student in the sample **must** be sent to Pearson in May in the year of assessment. Please see our *UK Information Manual* for the submission deadline date. A copy is made available to all examinations officers and is available on our website: qualifications.pearson.com.

If the moderation indicates that centre assessment does not reflect national standards, an adjustment will be made to students' final marks to compensate.

For further information please refer to the Joint Council for Qualifications (JCQ) document *Instructions for conducting non-examination assessments (new GCE and GCSE specifications)* on the JCQ website: www.jcq.org.uk. The assessment of this qualification must comply with these instructions.



