**NZQA**

**Approved**

Achievement standard: 91344 Version 3

Standard title: Implement advanced procedures using resistant materials to make a specified product with special features

Level: 2

Credits: 6

Resource title: Making a costume with the wow factor

Resource reference: Construction and Mechanical Technologies VP-2.20 v2

Vocational pathway: Manufacturing and Technology

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| Quality assurance status | These materials have been quality assured by NZQA.  NZQA Approved number A-A-02-2015-91344-02-8224 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.  Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

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Learner instructions

# Introduction

This assessment activity requires you to use resistant materials to make a garment for a wearable art show or for use as a costume for a film or theatre production. The garment or costume must include at least two special features and meet particular product specifications.

You are going to be assessed on how efficiently you implement advanced procedures using resistant materials to make a garment or costume with special features. You will need to select, schedule and apply techniques and tests to independently, accurately and safely develop your garment or costume.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

## Confirm your product specifications

You must work to a set of product specifications. These will not be directly assessed.

Confirm, with your assessor/educator, the specifications for the garment or costume you will make. Your assessor/educator may provide these or you may develop them independently and then confirm them with your assessor/educator. See Resource A for sample specifications.

In any case, your product must use resistant materials (such as wood, composites, metal, alloys, ceramics, or plastics) and have at least two special features that rely on the application of advanced craft skills.

You must include at least one structural special feature and at least one aesthetic special feature.

A structural special feature could include jointing methods that allow the required movement of the finished product, or methods used to treat the materials and form the required shape, such as carbon fibre moulding, for example.

An aesthetic special feature could include parquetry, inlaid design, the use of composite materials/gels to mould and form shape, the texture and the appearance of final product, or fabrication using latex for effect, for example.

## Select and schedule techniques and tests

Create an overall construction plan that sets out what you will do, and in what order you will do it, to complete your product to specification. You will do the following:

* Decide what techniques you will use to make your special features. These could be special joining, fabrication or moulding techniques, for example.
* Decide what tests you will use to monitor the construction of your special features, and to demonstrate that your garment or costume meets the specifications. For example, you could develop a specification checklist that includes testing procedures such as measuring, trialling, fitting and visual checks. See Resource B for examples of test procedures.
* Review the relevant health and safety regulations and decide what techniques you will apply to comply with these. For example, you may tie up long hair, wear flat, covered shoes and suitable clothes, and remove dangly jewellery.
* Confirm the order in which you will do the various steps involved in the construction of your special features in the garment or costume.
* Consider how you can best economise time, effort and materials through the techniques and tests you select and the order in which you schedule them.
* Keep a brief record of your decisions in your portfolio.

## Make your specified product

Manufacture your garment or costume by following your construction plan. Accurately and independently:

* use your selected construction techniques, modifying them as needed
* apply scheduled techniques to comply with relevant health and safety regulations
* undertake ongoing testing to ensure that the product meets your specifications.

Keep a record, in your portfolio, of what you did and any problems you overcame. For example, you could annotate your construction plan, take photographs and complete a testing checklist. Your record should show how you implemented the techniques and tests accurately and in a way that economises time, effort and materials. See Resource C for examples of efficient work habits.

When you have completed your garment or costume, photograph it to show the detail of its special features, its fit and other aspects to demonstrate how it meets the specifications.

At the completion of this activity, you will submit:

* your finished garment or costume
* a portfolio that shows how you have selected, scheduled and applied techniques, undertaken testing and made efficient use of time, effort and materials.

Your assessor/educator will provide guidance as to how you can demonstrate what you have done and explain why you have done it. Your portfolio could contain, for example:

* an annotated construction plan, showing any modifications you made
* a list of materials ordered and used, and costs incurred
* a schedule of tests, showing what tests will be done and when they will be done and recording the outcome of these tests
* checklists and annotated photographs to show accurate execution of techniques and testing procedures
* annotated photographs to show economic use of materials (for example by photographing materials, the pieces cut, and any material not used)
* brief written comments or explanations (for example as a dated log)
* annotated photographs of the finished product.

# Resource A

## Sample specifications for a garment or costume

Product specifications must be measurable, for example the product:

* is manufactured and assembled to the tolerances indicated in the drawings
* operates in compliance with the design and its intended purpose as a garment for a wearable arts show or a costume for a film or theatre production, including the mechanical operation and movements required to achieve the desired visual effect
* has robust construction to withstand its intended purpose
* has a finish that will be sufficiently robust to allow it to fulfil its intended purpose
* is light enough to allow a person of average size to wear and operate it.

# Resource B

## Sample tests for a garment or costume

To test a garment for a wearable arts show or a costume for a film or theatre production, you could do the following:

* test joints using destruction testing, using a successfully welded joint as a comparative control
* check the individual pieces of the garment or costume move as intended when combined together
* make sure the garment or costume can be easily put on and removed by the wearer
* check that the garment or costume can be correctly operated by the wearer
* check that the garment or costume is light enough for the wearer to wear and operate
* check that the desired aesthetic has been achieved
* check that any graphics, decals or applied designs are as intended and that any finish is evenly applied.

# Resource C

## Examples of efficient work habits

When working efficiently, you could be expected to:

* have all of your resources available when you need them, organising this with your assessor/educator beforehand if necessary
* be organised in your workplace and have alternatives when you can’t get on a particular machine at the time you may need it
* store all materials safely between work sessions so you can easily find them and start work quickly when you come to your workplace
* be lean and mean with your materials, for example cutting from the end rather than the middle of a length of material when you only require a small piece
* have a plan of what you want to achieve each day before you arrive at your work session and get on and do this
* know and practise the most efficient techniques to construct the garment or costume.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to efficiently implement advanced procedures to make a garment for a wearable arts show or a costume for a film or theatre production using resistant materials such as wood, composites, metal, alloys, ceramics, or plastics.

The specified product must include two special features: one or more aesthetic special feature and one or more structural special feature. These special features must require the consistent application of accepted conventions in advanced craft skills, which may relate to things such as flush, parallel, perpendicular, offset, symmetry, tolerance, ease, press fit, clearances, eccentricity and taper, for example.

# Conditions

Since the standard requires you to assess the ways in which the techniques and tests are implemented, learners should complete their practical work in the presence of their assessor/educator.

While learners are engaged in the assessment, it is acceptable to conference with and to support them. For example, dealing with mechanical or electrical faults is not intended to be part of the task.

Before the learner begins to make their product, ensure that:

* they have a set of approved product specifications, either provided by you or developed by the learner in negotiation with you
* the selected materials and special features provide sufficient scope for the learner to meet the requirements of the standard
* they are familiar with the techniques they will need to use to construct the special features and have had the opportunity to practise different techniques, such as plastic welding and joining techniques that allow movement, and finishing techniques such as spray painting, using masking tape or templates, and applying decals
* they trial and select techniques that will enable them to achieve optimal quality in their special features
* they have practised scheduling construction techniques and tests in a construction plan
* they know the accepted codes of practice to develop and test their product and its special features in order to construct it accurately to specifications, including the relevant health and safety regulations
* they know how to plan and implement their techniques and testing procedures in ways that economise time, effort and materials.

# Resource requirements

Learners require access to an appropriate work environment and to suitable tools and materials to safely implement the special features and complete their product. These could include normal fixed machine tools, marking out equipment, basic hand tools and a spray-painting booth. Plastic welding equipment could be used for jointing or appropriate plastics glues could be used. Suggested materials include PVC tubing, carbon fibre and fibreglass.

Learners developing their own product specifications may require examples of these to refer to.

Learners also require access to a camera to document their progress.

You may want to suggest that learners visit inspiring websites, such as:

[www.wetanz.com](http://www.wetanz.com)

[www.worldofwearableart.com](http://www.worldofwearableart.com)

# Additional information

This standard requires you to make judgements about the ways in which techniques are implemented, as well as the quality of the finished product. For example, you are required to notice (for Merit) whether the learner has shown ‘independence and accuracy in the execution of the techniques and tests’ and (for Excellence) whether the learner has worked ‘in a manner that economises time, effort and materials’.

## Learner portfolio

This assessment activity requires learners to keep a brief record of their progress in a portfolio to provide evidence for assessment. This ensures that learners understand the basis on which they are being judged and confirms that the assessor/educator’s judgements are made on a sound basis. You could add your own observations to the learners’ records.

Guide learners on what to include in the portfolio. The recording of evidence is not intended to become unduly arduous.

## Assessor/educator observation and assessment

When assessing learners during the course of this activity, you may want to consider, but are not limited to, the following questions:

* Independence*:* What level of assessor/educator input did the learner require? From work session observation of learner interactions with other learners, how independently did they work?
* Accuracy:How accurately has the learner executed the scheduled techniques and tests? How accurately have they followed through on information gained from testing?How accurate is the finished product?
* Economy of time:How effectively did the learner organise themselves and manage their resources so that they could quickly pick up where they had left off in a previous work session? Did they organise the order in which they undertook techniques to minimise downtime?
* Economy of effort: From the learner’s data log entries and work session observation, to what extent did the learner know what to do, rather than relying on trial and error? Did the learner use data from testing to guide their next practice and the choice of the correct tool for the task?
* Economy of materials:To whatextent did the learner minimise the use of materials?

# Assessment schedule: Construction and Mechanical Technologies 91344 – Making a costume with the wow factor

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner implements advanced procedures using resistant materials to make a specified garment or costume with special features by:   * selecting techniques to achieve at least two special features (one structural and one aesthetic)   For example, the learner:   * follows their construction plan and with some assessor/educator guidance, shapes the component pieces of the design using appropriate marking out and cutting tools * with guidance, selects the joining processes to join the resistant material pieces together; areas to be joined are cleaned and the correct joining processes are used to create the joins, with some guidance * with guidance, selects appropriate marking out and cutting tools to apply selected graphics to the product. * undertaking testing to monitor special feature construction and to demonstrate the product meets specifications   For example, the learner:   * with guidance and prior to use, checks that the design meets the aesthetic and structural requirements of the special features selected * tests the joints between the components of the design to ensure that they allow the desired movement and effects required. * applying techniques to comply with relevant health and safety regulations   For example, the learner:   * follows the working environment rules regarding the correct use and application of resins involved with composite materials * ensures adequate ventilation in the workspace, rolls sleeves up when using machines, and ensures that machines are turned off before using any measuring instruments * wears appropriate footwear and clothing, tied hair up and removes dangly jewellery.   *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner skilfully implements advanced procedures using resistant materials to make a specified garment or costume with special features by:   * selecting techniques to achieve at least two special features (one structural and one aesthetic)   For example, the learner:   * follows their construction plan, independently shapes the component pieces of the design using appropriate marking out and cutting tools * with guidance, selects the joining processes to join the resistant materials pieces together; areas to be joined are cleaned and the correct joining processes are used to create the joins * selects appropriate marking out and cutting tools to apply selected graphics; the graphics and/or decals are applied accurately. * showing independence and accuracy in the execution of the techniques and tests to monitor special feature construction and to demonstrate the product meets specifications   For example:  The learner monitors their own progress and manages their time to complete the techniques and tests as scheduled. The testing and techniques used are accurately executed.   * applying techniques to comply with relevant health and safety regulations   For example, the learner:   * follows the working environment rules regarding the correct use and application of resins involved with composite materials * ensures adequate ventilation in the workspace, rolls sleeves up when using machines, and ensures that machines are turned off before using any measuring instruments * wears appropriate footwear and clothing, tied hair up and removes dangly jewellery.   *The above expected learner responses are indicative only and relate to just part of what is required.* | The learner efficiently implements advanced procedures using resistant materials to make a specified garment or costume with special features by:   * selecting techniques to achieve at least two special features (one structural and one aesthetic)   For example:  The learner develops and follows a construction plan that describes an efficient approach to making the garment or costume.   * showing independence and accuracy in the execution of the techniques and tests to monitor special feature construction and to demonstrate the product meets specifications, economising time, effort and materials   For example, the learner:   * with limited assessor/educator support, makes the garment or costume to meet the specifications * uses testing and techniques accurately, e.g. uses destruction testing to check the joints are accurate, strong and meet safety requirements; puts two pieces of plastic welded material together in the vice and tests it to destruction; looks at the weld when it breaks to see if it has penetrated both pieces; compares it with a control joint and compares different welding methods * plans, when measuring and cutting out the materials, to avoid wastage; measurements are accurate with minimal wastage and materials are cut once with minimal effort; the cutting tool for the material and type of cut are correctly selected * identifies the correct tool for each process (moulding, cutting, joining, etc.); due to correct tool selection, time and effort are minimised during these processes * is organised with their materials and in their workspace, allowing easy transitions from one work session to another. * applying techniques to comply with relevant health and safety regulations   For example, the learner:   * follows the working environment rules regarding the correct use and application of resins involved with composite materials * ensures adequate ventilation in the workspace, rolls sleeves up when using machines, and ensures that machines are turned off before using any measuring instruments * wears appropriate footwear and clothing, tied hair up and removes dangly jewellery.   *The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.