# Levels 7/8 Drama Activity

## No-Sew Puppetry

### Introduction to Numeracy in Drama

Drama students undertake tasks to make and respond to drama and performance. Students refine and extend their understanding and use of roles, characters, relationships, and situations. Students also extend the use of voice and movement to sustain belief in character and to communicate expressively with creative intention.

Key elements of drama that may involve numeracy skills are:

* Space: mapping objects and actors in the performance space using stage placement principles
* Time: exploring drama from a range of cultures, times, and locations; using the voice and body in paced ways for dramatic effect
* Symbol: exploring representation of abstract ideas and concepts
* Production elements/stagecraft: lighting, staging, designing sets, and making costumes

Drama students develop skills that are “transferable across learning contexts and support development of literacy and numeracy capabilities” (Australian Curriculum, Assessment and Reporting Authority [ACARA], n.d.-a). There is a range of ways that students can embody transferrable skills in numeracy concepts in Levels 7 to 10 Drama, such as:

* Using spatial skills when planning and analysing relationships between body and space to stage drama performances, including measuring and mapping performance spaces, and plotting sight angles and movement of performers, props, and sets
* Considering mathematical concepts alongside dramatic aspects such as depiction and use/manipulation of time within a story; representing abstract concepts symbolically through body movements, costumes, and lighting; and using symmetry/asymmetry and geometric formations in stage blocking
* Using scale, ratio, and proportion to achieve different dramatic purposes (e.g., creating oversized props to make actors appear smaller than reality), and when documenting stage designs

Students acquire knowledge and skills in numeracy throughout their lifespan. In Levels 7 to 10 Drama, students continue to apply and build on their numeracy skills. For example, students might use spatial reasoning when considering the power relationships between characters and the ways that these relationships can be manipulated through placement up or down stage. Students can use their understanding of geometric properties to determine the area of the performance space in exploring concepts such as position and location when designing sets. Students may extend their knowledge of measuring lengths and angles when developing lighting plans to investigate how mood changes can be created and enhanced on stage under the effect of different intensities of lighting. Students also use scale, proportional reasoning, and operations with four-digit numbers as they read and create timelines when studying changes in theatrical styles over the centuries. By incorporating mathematical concepts, students are able to make and respond to drama works.

### Developing Numeracy Understanding in Drama

Hilton et al. (2017) remind teachers of drama that the promotion of numeracy is not solely the responsibility of mathematics teachers. In Australia, numeracy is recognised as a general capability and is the responsibility of all teachers across all learning areas (ACARA, n.d.-b). Teachers are required to identify the specific numeracy demands of their learning area(s), provide learning experiences and opportunities that support the application of students’ general mathematical knowledge and skills, and use mathematical terminology accurately in their teaching.

Roy (2014) argues that many students feel challenged by numeracy and often struggle to engage with the pedagogical approaches that are frequently employed in the siloed teaching of mathematics. In drama, embodied pedagogies are used, and there is a focus on collaboration, which makes drama a potentially engaging subject area in which students can become numerate, that is, to “develop the skills and confidence to use mathematics at school and in their lives beyond school” (p. 12). Burke and Sharp (2018) argue that opportunities for developing numeracy capabilities occur in “both the content of drama—the real and imagined scenarios created—and the process of drama—the procedures for designing, conducting, critiquing and recording performances” (p. 145). Numeracy can be incorporated into the content of drama activities by creating imagined worlds and situations that involve spatial and numerical concepts and language (e.g., acting as an army of ants in an oversized human world, role-playing shopping or construction site scenarios) or by using drama to create alternative representations of numerical data (e.g., creating an embodied performance representing COVID-19 statistics).

In the process of drama, numeracy is most inherently found in stagecraft. When designing and creating props, sets, costumes, stage directions (blocking), rehearsal schedules, and budgets for a performance, students are required to apply understandings of space, shape, measurement, time, and financial mathematics. Non-mathematics teachers need not change the content of their lessons to include mathematics; rather, when the students are using mathematics, the teacher should make this usage explicit to the students. Hilton et al. (2017) found that learning about stage management can engage students in mathematical reasoning. By using such activities, teachers can provide students with opportunities to use mathematics in rich real-world contexts. For instance, students can be engaged in measurement, spatial thinking, estimation, and calculation. Foregrounding the mathematical thinking involved in drama activities helps students to make connections between their mathematics knowledge and its use in the new context. Hence, drama making, performing, and responding become contexts for solving real-world mathematical problems.

Likewise, Duatepe-Paksu and Ubuz (2009) found that numeracy-focused drama activities provided opportunities for students to contextualize geometric concepts and problems in a collaborative learning environment. Additionally, students’ attitudes towards both drama and mathematics may be improved due to the application of mathematics in an exciting, motivating, and interesting learning environment. Furthermore, Al-deeb and Aladini (2021) found that engaging in drama improved students’ conceptual knowledge and logical thinking in mathematics. Hence, as shown by the results of these studies, engaging in numeracy-focused activities in drama can effectively help learners grasp mathematical concepts and facilitate the development of logical thinking skills.

## Lesson Plan: No-Sew Puppetry

In this lesson, students will explore features of puppetry, develop roles and characters consistent with stock characters in puppetry, and explore puppetry performance styles that convey status, relationships, and intentions. The use of stock characters to conceptualise status can be connected to commedia dell’arte.

The Western performing arts (and screen) practice of puppetry involves the process of employing a range of considerations to assist the audience to suspend their disbelief and be drawn into a non-naturalistic world. Puppetry is part drama and part illusion. The illusion aspect is based on mathematical principles of puppet size, ratio of puppet to staging, audience line of sight, lighting perspectives, and set positioning and transitioning. In order to construct and manipulate puppets in different puppetry spaces, students require knowledge of methods to measure and manipulate audience perspective when constructing puppets, props, and the puppet theatre, and when considering lighting.

### Prerequisite/Corequisite Knowledge: Drama

Students need to have and/or develop the ability to:

* Explain how the elements of drama and design elements can be manipulated to communicate meaning
* Demonstrate an understanding of performance styles when designing production elements
* Conduct independent research on theatrical styles throughout history
* Conceptualise stagecraft and design elements, and translate these to written and practical forms

### Background Mathematical Skills and Understandings

Teachers of Drama are not expected to teach the mathematical knowledge and skills that students will draw upon when engaging with this activity. The students will have learnt and should be adept with the required mathematical knowledge and skills to complete the activity. According to the Victorian Curriculum: Mathematics, the required mathematical knowledge and skills should have been developed in earlier years of schooling, that is, by the end of Level 6.

For this activity, the background mathematical skills and knowledge are:

* Knowledge of appropriate metric units for lengths, areas, and volumes
* Ability to use instruments to measure lengths
* Experience with locations and changing location in space
* Ability to apply enlargement/reduction (scale factor) transformations of common two-dimensional shapes, and to compare the image obtained with the original
* Ability to create (and interpret) simple grid maps (floorplan) to show position and pathways, and to use simple scales
* Knowledge of and ability to work with fractions
* Knowledge of angles

## Lesson Description

In this lesson, the teacher will facilitate a short inquiry into different forms of puppetry.
The teacher can decide how long the inquiry might take, based on the students’ level of experience. In the following sections, students will undertake a 30–45 minute Engage and Explore stage to learn about puppetry styles throughout history and globally, a 60–90 minute Explain and Elaborate stage to construct a no-sew puppet and realise a text, and a 30–45 minute Student Evaluation stage to share their understanding of puppetry with others.

### Stage 1: Engage and Explore

To begin, the teacher will set their expectations for learning and interacting through an introductory activity, which is a structured discussion of puppetry throughout history to the use of puppetry today. The teacher can use a selection of the following resources to structure their introduction:

* Vietnamese Water Puppets: <https://www.youtube.com/watch?v=rxIff980XyM>
* Bunraku: <https://www.youtube.com/watch?v=1qcBSAwQVpw>
* Wayang: <https://www.youtube.com/watch?v=pfydro4X2t0>
* Punch and Judy: <https://www.youtube.com/watch?v=Z2ANMKeroi4>
* The Muppets: <https://www.youtube.com/watch?v=C4YhbpuGdwQ>
* King Kong: <https://www.youtube.com/watch?v=O-yYe1VZ0ko>
* Lion King: <https://www.youtube.com/watch?v=ewOAsUWQJvo>
* War Horse: <https://www.youtube.com/watch?v=wujNwkObgN4>
* Bluey: <https://www.youtube.com/watch?v=7xgCZnUFxvA>
* Polyglot Theatre: <https://www.polyglot.org.au/>

The teacher will guide students through a discussion of the variety of puppetry performance styles (including stick, hand, and string puppets). The teacher will direct students towards stimulus material that could be translated into puppetry performances such as fables, fairy tales, myths, and legends across a variety of cultures, or specific tales using stock characters, such as Punch and Judy, commedia dell’arte, melodrama, and pantomime.

The students will work in groups of four to select a particular puppetry style and stimulus story or script with which they are going to work for the following activities.

Students will first create both front perspective and floorplan (bird’s-eye view) scale drawings of their planned performance space/puppet theatre. The teacher will provide students with prompts about initial considerations, including, but not limited to:

* Puppet Manipulation: Will your puppets be on strings, sticks, or your hand? How will you determine the size of the performance area/puppet theatre to allow for your chosen manipulation method?
* Puppeteer Placement: Where will the puppeteer be? Will they be visible to the audience? What will the puppeteer need to wear (if relevant)?
* Vocal Projection and Audience Line of Sight: How far away will your audience be from the performance area/puppet theatre? How will this distance shape your vocal projection and what the audience will see?

In their groups, students reflect on, discuss, and list the staging advantages and disadvantages of their selected performance space/puppet theatre.

Students will continue to work in groups to determine key production aspects required to stage their particular performance, such as backdrop(s), properties, and lighting, and add these aspects to scale into their design. Further exploration can be facilitated by directing students to consider set/lighting changes. Students could also create a diorama of their performance space/puppet theatre or use a CAD (Computer Assisted Design) program.

### Stage 2: Explain and Elaborate

The students will work individually to construct a puppet based on their selected character within their selected group script. During the session introduction, the teacher will explicitly teach ‘no-sew puppet’ construction.

#### No-Sew Puppet Materials:

Recycled materials are preferred (See <https://www.trashpuppets.com/> for inspiration).

* 1 m2 heavy cotton-based material (e.g., the back section of an old shirt)
* Extra material for stuffing (e.g., shirt sleeves)
* Mobility devices: elastic bands or ribbon for finger inserts; prunings, or icy pole sticks for rods; material offcuts (e.g., shirt sleeves), fishing line, or cotton for strings
* Glue, scissors, pins, and paints/textas
* Other materials as chosen by the students

#### No-Sew Puppet Instructions:

See Appendix for pattern.

1. Using the pattern as a guide, measure and cut or tear the material to create the arms and bodice pieces. Fold the remaining head/body/legs piece into thirds and mark these fold lines with pencil or chalk. Note: If creating a larger puppet to represent higher status or a smaller puppet to represent lower status, the students can work with material larger or smaller than 1 m2, and should recalculate the dimensions of the arms and bodice pieces to maintain the existing proportions of the pattern.
2. Roll each arm piece into a long tube and tie a single knot in each end.
3. Place the arms horizontally on the floor and then place the unfolded head/body/legs piece on top, lining up the arms at the top ⅓ mark.
4. Gather the head/body piece into the centre. Cross the arm pieces over and tie them in a knot.
5. Place the bodice piece horizontally on the floor and then place the puppet in the centre of the bodice piece. Align the puppet shoulders with the bodice piece. Cross the two ends of the bodice piece over the chest and under the arms, and continue crossing back and forth down the length of the body section. Tie off the ends of the bodice piece.
6. Turn the puppet over and gather the edges of the head together, stuffing as required, and then pin or tie off the edges of the head section.
7. Once the basic construction method has been practised, the puppet can be deconstructed and reconstructed to suit the required character.
8. Legs can be created by cutting or tearing at the ½ width line up to the bodice, rolling each leg (as per arms), and tying off at the end of each leg.
9. Once finalised, the puppet can be decorated and mobility devices can be attached.

Using their group’s text and staging decisions, each student will adapt their puppet for their selected character/puppeteer. Students need to clearly demonstrate skill in voice and manipulation of appropriate puppet gestures to convey the character.

In groups, students work together to mock up a performance space/puppet theatre for their scene based on their scale drawings, using objects in the drama classroom. Students need to calculate the following:

1. Length of mobility devices

2. Appropriate distance of stage from audience

3. Appropriate distance of puppeteers from stage

4. Angles and timing of intentional use of lighting and/or other audio-visual effects

#### Elaboration Activities:

* The students can construct an actual performance space/puppet theatre from their mock up and scale drawings.
* The students can research stylistic conventions to influence their interpretation of their chosen script and incorporate this information into the staging and manipulation considerations.
* The teacher can join two groups to work together, to share and compare their approaches to different scripts.
* The teacher can challenge students to incorporate at least one modification that they have learned from listening to other students’ approaches.

### Stage 3: Student Evaluation

The teacher will facilitate the groups to present their performance plans to each other. This presentation can be done as a gallery walk, a poster activity, a video or live presentation, or a table swap, depending on the time allocated to the activity.

After the presentations, the teacher will use open-ended questioning techniques to facilitate a class reflection after the presentations. The teacher can use questions such as:

* How did this group ensure that their backdrop was in the audience’s line of sight?
* What strategies did this group use to ensure there was sufficient depth in their puppet theatre for the actors to manipulate their puppets?
* How did this group manipulate scale to represent status?
* How does the length of manipulation devices affect the control of the puppet?

Students will co-construct success criteria and record their reflections on others’ presentations and on their own presentation in relation to these criteria. The assessment of the activity can also include a summative assessment of learning by the teacher. This summative assessment could include a portfolio of photographs and annotations assessed against a rubric designed to determine the accuracy of the measurements and scale, in addition to creativity.

## Table 1: Links to the Victorian Curriculum – Drama

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| --- | --- | --- |
| Strand and Sub-Strand (if applicable) | Content Description (Code) | Elaboration(s) |
| * Explore and Express Ideas
 | Develop roles and characters consistent with situation, dramatic forms and performance styles to convey status, relationships and intentions (VCADRE034) | Developing techniques relevant to dramatic forms, for example, applying established conventions and traditions |
| * Drama Practices
 | Develop and refine expressive skills in voice and movement to communicate ideas and dramatic action in different performance styles and conventions (VCADRD036) | Developing techniques to engage an audience, for example, by expressing and experiencing character relationships through vocal dynamics and tone, eye contact, proximity and space |
| * Present and Perform
 | Perform devised and scripted drama using a range of performance styles, maintaining commitment to role and applying stagecraft (VCADRP037) | Performing roles using conventions relevant to the performance style |
| * Respond and Interpret
 | 1. Analyse how the elements of drama have been combined in devised and scripted drama to convey different forms, performance styles and dramatic meaning
2. (VCADRR038)

Identify and connect specific features and purposes of drama from contemporary and past times, including the drama of Aboriginal and Torres Strait Islander peoples to explore viewpoints and enrich their drama making (VCADRR039) | Identifying and analysing how the elements of drama are used in the historical and contemporary conventions of particular forms and stylesDiscussing how the elements of drama and stagecraft have been used in a performance they have seenIdentifying contexts, for example, social, historical or cultural relevant to the forms and styles represented in their dramaConsidering the cultural context in which the drama they view was made, for example, what are the protocols for viewing Aboriginal and Torres Strait Islander drama and other culturally specific performances? What historical forces and influences are evident in the drama? How does this style of drama vary from drama that is typical of other traditions or other locations? |
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## Table 2: Links to the 21st Century Numeracy Model (Goos et al., 2014)

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| Aspect of the Model |  How This Aspect is Addressed by the Lesson |
| **Attention to Real-Life Contexts*** Citizenship
* Work
* Personal and Social Life
 | In this lesson, students consider how constructing puppets for specific spaces involves employing mathematical concepts such as measurement, scale, and angle. Students develop a deeper understanding of personal connection to space and others through exploring the relationship between puppets, puppeteers, and performance space. Students are afforded experience in translating 2D plans into 3D spaces, which is a transferable skill to many everyday activities in work, and personal and social life contexts. |
| **Application of Mathematical Knowledge*** Problem Solving
* Estimation
* Concepts
* Skills
 | Students’ problem-solving skills are developed through responding to the spatial requirements of specific puppet constructions and performance sites to produce a plan for staging a puppetry scene. Students apply mathematical knowledge and skills in measurement, scale, dimension, perspective, and angles by documenting a performance space and analysing it in relation to a range of action-oriented criteria. Students also employ methods of manipulating spatial dimensions and relationships for dramatic communication. |
| **Use of Tools*** Physical
* Representational
* Digital
 | Students use physical tools (rulers, tape measures, and graph paper), digital tools (calculators), and representational tools (scale drawings) in the lesson. This exploration can be extended through using digital tools such as CAD software. |
| **Promotion of Positive Dispositions*** Confidence
* Flexibility
* Initiative
* Risk
 | Students use initiative to select a stimulus material, method of puppet manipulation, and performance space/puppet theatre. Students problem-solve the specific spatial opportunities and limitations with regard to size and scale that emerge when realising their script. They develop confidence in their numeracy capabilities by working creatively with spaces and texts individually and collaboratively. |
| **Critical Orientation*** Interpreting Mathematical Results
* Making Evidence-Based Judgements
 | Students employ mathematical thinking to analyse and evaluate their own and others’ designs for working in specific puppetry spaces. Students use critical thinking to conceptualise actual spaces as important means of conveying concepts such as status and role. |

#### References

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**Appendix: No-Sew Puppet Pattern**

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| HEAD1/3(3) PLACE ROLLED ARMS PIECE ALONG THIS LINE | 🡨 20 cm 🡪(2) ARMS PIECETear or cut | 🡨 10 cm 🡪(5) BODICEPIECETear or cut |
| BODY1/3  |
|  LEGS (Optional)1/3 |  (8) Tear or cut along this line  if making legs |