# Levels 9/10 Drama Activity

## Performance Spaces

### 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: Performance Spaces

In this lesson, students will explore features of different types of performance spaces and methods of documenting blocking appropriate to these spaces/styles.

The Western performing arts and screen practice of blocking (i.e., directing the performers’ use of the stage for optimal effect) involves the process of employing a range of considerations, such as audience line of sight, performers’ spatial distancing from scene to scene, lighting perspectives, and set positioning and transitioning. In order to perform in different spaces, students require knowledge of methods to block the stage, including cross-cultural usages of performance space and ways to rehearse blocking successfully.

Students will be able to analyse dramatic requirements of diverse performance spaces. Students will demonstrate their ability to respond to these spaces through documentation of their blocking of a scene that involves features of a chosen style of performance space.

### 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 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 8.

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
* Ability to calculate perimeters and areas of rectangles, parallelograms, rhombuses, kites, triangles, and circles, using formulae
* Ability to apply enlargement/reduction (scale factor) transformations of common shapes
* Knowledge of ratio and its relationship to scale factors
* Ability to use simple scales and legends to interpret information contained in basic maps, and to create simple maps
* Knowledge of angles
* Ability to sequence dates and operate with four-digit numbers
* Ability to scale number lines, and to locate and place numbers (dates) on number lines
* Experience with locations and changing location in space

## Lesson Description

In this lesson, the teacher will facilitate a short inquiry into different performance spaces. 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 become familiar with different styles of performance spaces and conventions, a 60–90 minute Explain and Elaborate stage where they create their own blocking design for their selected style/space, and a 30–45 minute Student Evaluation stage to present and share their ideas with others.

### Stage 1: Engage and Explore

To begin, the teacher will set expectations for students’ learning and interactions through an introductory activity, an analysis of the drama classroom. Students will work in small groups to measure the dimensions of the performance space in the drama classroom to record height, width, and depth for blocking, set, backdrop, and lighting considerations. The teacher will direct this activity, asking students to measure the height, width, and depth of the space, and to record this information in a systematic way. The height is required for lighting and set measurements; the depth and width are required for set and actor placement. Teachers should facilitate students in safe practices when working in a space with others. For example, students should use a laser distance measurer to safely measure objects out of normal reach, such as the height of the ceiling.

Once students have developed and refined their method for determining the area of the drama classroom space, groups can compare their answers and discuss any differences.

The teacher will then show images/videos and discuss a variety of performance spaces and associated staging conventions such as theatre in the round, the thrust stage, and the proscenium arch, as developed and used throughout history.

Some examples include:

* Ancient Greek and Roman Theatre: Greek Theatre used in *Mighty Aphrodite*, Roman Theatre (https://www.britannica.com/art/Western-theatre/Ancient-Rome)
* Noh Theatre: Photo tour of the Gakuya, Kagami no ma and other areas (<https://www.the-noh.com/en/tour/nnt.html>)
* The Medieval Stage: *The Play of Abraham and Isaac* reproduced in 1974 by The Movie Show Co., Inc. (<https://www.britannica.com/art/Western-theatre/Medieval-theatre>)
* Elizabethan Theatre: The Globe, a scene from *Shakespeare in Love* ([https://www.shakespearesglobe.com/](https://www.shakespearesglobe.com/%20))
* Contemporary styles: Theatre-in-the-round (<https://www.britannica.com/art/theatre-in-the-round>), naturalism and realism ([https://www.bbc.co.uk/bitesize/guides/zxn4mp3/revision/3](https://www.bbc.co.uk/bitesize/guides/zxn4mp3/revision/3%20))

The students and teacher will collectively construct a timeline of key performance spaces across history, such as Greek amphitheatre, medieval cycle drama, Chinese opera, mobile stages, the Elizabethan stage, the naturalistic stage, the black box, and alternate spaces such as outdoors and the home. The teacher will highlight the mathematical problem-solving that occurs in this activity as the students make decisions about how the timeline will be drawn and to what scale. Students will then work in groups of four to select a performance space style. Students will create a scale floorplan/aerial view (or, as an extension, a scale model/diorama) of their selected performance space.

The teacher will provide students with prompts about initial blocking considerations including, but not limited to, performer placement and movement, vocal projection, and audience line of sight. In their groups, students will reflect on, discuss, and list the staging advantages and disadvantages of their performance space.

The teacher will assist students to select a playscript for their selected performance space that aligns with the chosen period. For example, if the students have chosen Elizabethan Theatre, the teacher can assist students to select a play by Shakespeare. Students will continue to work in their groups to determine key production aspects required to stage their particular performance—such as set items, backdrop(s), properties, and lighting —and add these to scale into the floorplan/diorama. Further exploration can be facilitated by challenging students to consider set/lighting changes.

There is an opportunity to extend these activities to involve ICT by using a Computer Assisted Design (CAD) program. AutoCAD and Vectorworks have a student version that is free for any eligible students (and educators).

### Stage 2: Explain and Elaborate

During the session introduction, the teacher will explicitly teach/review the various theatrical periods, the timeline, and each group’s floorplan. The teacher will facilitate a problem-solving activity where students will select a section or scene from their playscript. The students will work individually with an accurate copy of their group’s floorplan or diorama to block a scene. Students can take a series of photographs of the variations in placement on their floorplan or diorama.

Using their group’s existing floorplan and staging elements, each student will select one section or scene from the playscript to block for the characters/actors. Students need to clearly demonstrate what lines from the playscript will be delivered from what position on the stage, and what additional actions will be required by the characters/actors.

Working in pairs from the original group of four, students will explain to each other how their blocking decisions are illustrative of the following considerations:

1. systematic use of space for characters’/actors’ action
2. systematic use of space for set design
3. purposeful use of acoustics
4. intentional use of lighting and/or other audiovisual effects

The pairs of students will work together to modify their blocking as a result of their discussions.

The teacher can challenge students to use prior knowledge of the dimensions and stylistic conventions associated with their selected performance space to influence their interpretation of their chosen script. Therefore, students will be able to accurately record blocking to scale.

Next, the teacher will rejoin the pairs into groups of four so that students can work together to share and compare contrasting space requirements, such as dimensions and accurate approaches to scaled blocking, in response to different scripts. The teacher will again challenge students to incorporate at least one more modification to their blocking documentation that they have learned from listening to another pair’s approaches.

If preparing students for VCE Theatre Studies, teachers can extend students by asking them to articulate their decisions, using specific terminology as outlined in the VCE Study Design.

### Stage 3: Student Evaluation

The teacher will facilitate the presentation of students’ ideas to each other. Each group will discuss and consolidate their ideas in order to present their work to the class. The 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/performances, 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 actors are visible to all audience members’ lines of sight?
* How did this group ensure accurate documentation of blocking the actors and objects within their selected performance space?
* What strategies did this group use to measure the drama classroom to determine the angles in their lighting design?
* What do you think was the most effective ratio used to create a scale drawing? Why?

Students will employ assessment as learning to record their reflections on their own and others’ presentations. Additionally, a summative assessment of learning may be carried out by the teacher. This assessment could include a portfolio of photographs and annotations assessed against a rubric designed to determine the accuracy of measurements and scale used, in addition to creativity.

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

|  |  |  |
| --- | --- | --- |
| Strand and Sub-Strand  (if applicable) | Content Description (Code) | Elaboration(s) |
| * Drama Practices | Structure drama to engage an audience through manipulation of dramatic action, forms and performance styles and by using design elements  (VCADRD043) | Learning and applying basic concepts for interpreting texts and contexts, directing dramatic action, and using available technologies  Structuring the performance space to convey dramatic meaning and sense of style for an audience |
| * Present and Perform | Perform devised and scripted drama making deliberate artistic choices and shaping design elements to unify dramatic meaning for an audience  (VCADRP044) | Working collaboratively as a member of a creative team to direct the blocking and staging of dramatic action to communicate intended meaning(s) for an audience |
| * Respond and Interpret | Evaluate how the elements of drama, forms and performance styles in devised and scripted drama to convey meaning and aesthetic effect (VCADRR045)  Analyse a range of drama from contemporary and past times, including the drama of Aboriginal and Torres Strait Islander peoples to explore differing viewpoints and develop understanding of drama practice across local, national and international contexts  (VCADRR046) | Evaluating how the features and conventions of forms and styles create dramatic meaning and theatrical effect  Considering how drama theory has been used in creating and performing the text  Linking conventions from different forms with purposes, origins and contexts. |

## Table 2: Links to the 21st Century Numeracy Model (Goos et al., 2014)

|  |  |
| --- | --- |
| 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 blocking effective dramatic action in specific spaces requires them to employ mathematical concepts such as measurement, scale, and angles. Expanding students’ appreciation of perspective by exploring the relationship between performers, performance space, and audience develops a deeper understanding of personal connection to space and others. Students are afforded experience in blocking dramatic works, which is a transferable professional skill to other art forms, including film and television. |
| **Application of Mathematical Knowledge**   * Problem Solving * Estimation * Concepts * Skills | Students’ problem-solving skills are developed through responding to the spatial requirements of specific sites to produce a plan for staging a dramatic scene. Students apply mathematical knowledge and skills related to measurement, scale, dimension, perspective, and angles by documenting a performance space and analysing this 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 and/or dioramas) 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 performance space. They problem-solve the specific spatial opportunities and limitations with regard to size and scale that emerge when realising their script. Hence, students will develop confidence in numeracy by using real-world measurements and calculations as they work creatively with spaces and texts, individually and collaboratively. |
| **Critical Orientation**   * Interpreting Mathematical Results * Making Evidence-Based Judgements | By responding to space and dramatic texts, students employ mathematical thinking to analyse and evaluate their own and others’ documentation to develop understandings of working in specific theatrical spaces. Students use critical thinking to conceptualise actual spaces as important means of conveying historical and abstract concepts. |

## References

Al-deeb, M., & Aladini, A. (2021). CLIL and drama on conceptual knowledge and logical thinking in mathematics. *Turkish Journal of Computer and Mathematics Education, 12*(13), 6897–6909. <https://www.turcomat.org/index.php/turkbilmat/issue/view/48>

Australian Curriculum, Assessment and Reporting Authority. (n.d.-a). *Literacy learning progressions and The Arts: Visual Arts.* <https://www.australiancurriculum.edu.au/media/4145/numeracy-visual-arts.pdf>

Australian Curriculum, Assessment and Reporting Authority. (n.d.-b). *Numeracy.* <https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/numeracy/>

Burke, R., & Sharp, H. (2018). Drama in the primary classroom: Contextualising critical numeracy. In M. Sellars (Ed.), *Numeracy in authentic contexts: Making meaning across the curriculum* (pp. 143–165). Springer.

Duatepe-Paksu, A., & Ubuz, B. (2009). Effects of drama-based geometry instruction on student achievement, attitudes, and thinking levels. *The Journal of Educational Research, 102*(4), 272–286. <https://doi.org/10.3200/JOER.102.4.272-286>

Goos, M., Geiger, V., & Dole, S. (2014). Transforming professional practice in numeracy teaching. In Y. Li, E. Silver, & S. Li (Eds.), *Transforming mathematics instruction: Multiple approaches and practices* (pp. 81–102). Springer.

Hilton, A., Hilton, G., & Sinclair, N. (2017). Staging a numeracy performance. *Australian Journal of Middle Schooling, 17*(2), 20–31.

Roy, D. (2015). The Pandorica opens: Drama and numeracy potentials in primary school learning. *Mask*, *37*(2), 12–18.