Preparing to teach this sequence – Year 5 – Light imitates art

**Year 5**

# Science journals

Create a class science journal, either in hard-copy or digitally. You might:

* use/create a large scrap book or flip chart.
* use poster/butchers’ paper so learning can be displayed in sequence on the wall.
* create a digital journal using your platform/ technology of choice.
* any combination of the above.

Plan for students’ creation of an individual science journal, either in hard-copy or digitally. They might:

* use an exercise book, scrap book or flip chart to record their thinking and gather resource sheets together.
* use a folder to store and collate resource sheets, diagrams, photographs etc.
* use a digital folder to store work samples, images and videos.
* any combination of the above.

See [Using a science journal throughout inquiry](https://primaryconnections.org.au/using-science-journal-throughout-inquiry) for more detailed information on the importance of science journals.

# Additional preparation

* Read through the teaching sequence.
* Note any adaptations you would like to make to suit your school’s and students’ context.
* Determine if your students will only design or will design and make a sculpture/artwork at the end of the sequence.
* Consider if you would like them to work as individuals, in teams, or if you will work as a whole class collective to design the sculpture/artwork.
* Consider how/where you will display the sculptures/artworks, and who you will invite to see them and hear about they were created.
* Begin collecting the resources required to teach the sequence.

# Materials required for this teaching sequence

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Resource | Lesson in which this resource is required | | | | | | | |
|  | **Lesson 1** | **Lesson 2** | **Lesson 3** | **Lesson 4** | **Lesson 5** | **Lesson 6** | **Lesson 7** | **Lesson 8** |
| Class science journal (digital or hard-copy) | X | X | X | X | X | X | X | X |
| Individual science journal (digital or hard-copy) *per student* | X | X | X | X | X | X | X | X |
| Materials to create a word wall or glossary | X | X | X | X | X | X | X | X |
| *Optional:*  A gallery of images depicting artworks that rely on light. Note: A gallery is already provided for you in the Creatively light Resource sheet. You may choose to source additional images to suit your classes needs and context. | X |  |  |  |  |  |  |  |
| A shoe box or similar *per group* | X  1 only | X |  |  |  |  |  |  |
| Torches Note: Torches are used extensively throughout the sequence. It is recommended that you source different strengths and styles of torches for demonstration purposes. You will also need enough torches for collaborative teams to use at the same time. It is recommended that these torches are all the same so that investigation results can be accurately compared between groups. | X | X | X | X | X | X | X  See item below for further details | X |
| 3 x torches *per group*  Each torch should be have it lens coloured, 1 x blue, 1 x red, 1 x green  Note: The most effective way to do this is to cover the lens of the torch with transparent or translucent sticky tape, then colour the tape using blue, red and green permanent markers. Alternatively, cover the lens of the torches with blue, red and green cellophane. After the lesson the tape/cellophane can be removed and the torches can be used for other purposes. |  |  |  |  |  |  | X |  |
| Scissors *per group* |  | X |  |  |  |  |  |  |
| An object small enough to place inside a show box or similar (as listed above) *per group* |  | X | X |  |  |  |  |  |
| Blu tack |  | X |  |  |  |  |  |  |
| Spray bottle filled with water |  |  | X |  |  |  |  |  |
| 2 x sheets of A4 paper, rolled into tubes. Ensure that one tube is slightly smaller in diameter so that the end of one can fit inside the other. |  |  | X |  |  |  |  |  |
| A pile of book or similar to create an obstruction *per group* |  |  | X |  |  |  |  |  |
| Access to materials students might test to see if they can change the direction of the beam of light. These materials **must** include reflective surfaces such as mirrors or foil and should also include clear plastic (hard and soft), white paper/cloth etc. |  |  | X |  |  |  |  |  |
| Object/s to create a shadow for demonstration purposes |  |  |  | X |  |  |  |  |
| A dark coloured object, such as a piece of black paper/cardboard, a book with a dark coloured cover, etc. |  |  |  | X |  |  |  |  |
| A selection of each of the following materials to test *per group*:   * transparent, e.g. cling wrap, certain plastic containers, food wrappings, glass, cellophane * translucent, e.g. baking paper, tissues/tissue paper, frosted glass/plastic, sheer fabric * and opaque, e.g. most things that can be easily sourced in the classroom, including paper, books, pencil cases, digital devices, erasers, desks |  |  |  | X |  |  |  |  |
| 3 opaque objects, one with straight edges, one with curved edges and one of their choosing (see [lesson steps](https://primaryconnections.org.au/teaching-sequences/year-5/light-imitates-art/lesson-4-what-happens-light-when-it-hits-non-reflective-surface?utm_source=docx&utm_medium=lesson4&utm_campaign=LIA) for suggestions) |  |  |  | X |  |  |  |  |
| Grid paper marked at 0.5cm (preferably) or 1cm intervals to use as a measurement screen to measure the height of the shadow *per group*  OR  Ruler or tape measure, to measure the height of the shadow, if the measurement screen above is not provided  *per group* |  |  |  |  | X |  |  |  |
| Rulers or tape measures *per group* (to measure the distance of the object from where the first shadow is cast) |  |  |  |  | X |  |  |  |
| An easily moveable small object that will cast a defined shadow, for example a glue stick |  |  |  |  | X |  |  |  |
| Clear plastic cup, preferably with no ripples or patterns on it |  |  |  |  |  | X |  |  |
| Pencil |  |  |  |  |  | X |  |  |
| Access to water |  |  |  |  |  | X |  |  |
| Piece of card, approximately 20cm x 20cm |  |  |  |  |  | X |  |  |
| Ruler |  |  |  |  |  | X |  |  |
| Scissors |  |  |  |  |  | X |  |  |
| **Lesson 7 supplementary investigation**  The following resources are *optional* if the supplementary investigation is required.  Choose the option/resources that best suits your students and context.  **Optional for supplementary investigation—option 1**   * Sticky tape * 3 x mirrors   **Optional for supplementary investigation—option 2**   * 3 x pieces of cardboard * 3 x pieces of foil large enough to cover the pieces of cardboard * Glue   **Optional for supplementary investigation—option 3**   * Access to view the [Simple Science: DIY Kaleidoscope](https://www.youtube.com/watch?v=KK4lNtewhFU&t=139s) YouTube video * Cardboard tube * Mirror paper or aluminium foil * Ruler * Scissors * Cardboard circle, about 10cm in diameter, or a compass or items to trace to make a circle * Coloured textas |  |  |  |  |  |  | X |  |
| Various sources of light, as suitable for use in a classroom. For examples torches, overhead lights, lamps, digital devices, sunlight etc. |  |  |  |  |  |  |  | X |
| Various transparent, translucent and opaque materials, suitable for students to use to create an artwork |  |  |  |  |  |  |  | X |
| Other materials as required to design/build a light sculpture/artwork such as glue, sticky tape, blu-tac, scissors etc. |  |  |  |  |  |  |  | Z |
| Student resource sheets Both **demonstration copies** for whole class reference, and **individual copies for each student/group** are required.  Whilst students often work collaboratively in teams to plan and carry out investigations, you might prefer for each student to create their own record to assist in the assessment of their Science understanding and Science inquiry.  Instances where **demonstration** or **individual/group** copies ONLY are required are noted in the list below, as well as any resource sheets that are **optional**.  Teachers are best placed to make decisions about any modifications resource sheet may require to best suit the needs of their students. | | | | | | | | |
| Optional: My thoughts Resource sheet NOTE: This may be used instead of or in conjunction with the In the dark Resource sheet. | X |  |  |  |  |  |  |  |
| Optional: In the dark Resource sheet  NOTE: This may be used instead of or in conjunction with the My thoughts Resource sheet. | X |  |  |  |  |  |  |  |
| Creatively light Resource sheet **Demonstration only** | X |  |  |  |  |  |  | X |
| Sources of light Resource sheet |  | X |  |  |  |  |  |  |
| Shining light Resource sheet **Demonstration only** |  |  | X |  |  |  |  |  |
| Around the corner Resource sheet |  |  | X |  |  |  |  |  |
| Passing through Resource sheet |  |  |  | X |  |  |  |  |
| I can see the light Resource sheet **Demonstration only** |  |  |  | X |  |  |  |  |
| Shadow masters Resource sheet |  |  |  | X |  |  |  |  |
| Umbra and penumbra Resource sheet **Demonstration only** |  |  |  | X |  |  |  |  |
| Variables grid Resource sheet **Demonsration only** |  |  |  |  | X |  |  |  |
| Shadow height investigation planner Resource sheet |  |  |  |  |  |  |  |  |
| Line of light investigation planner Resource sheet |  |  |  |  |  | X |  |  |
| Exposing the illusion Resource sheet **Demonstration only** |  |  |  |  |  | X |  |  |
| Mixing colours Resource sheet |  |  |  |  |  |  | X |  |