# **Core Skills Analysis**

### Art and Design

- The student has developed an understanding of 3D modeling principles by learning to create and manipulate objects within Blender.
- They have explored digital sculpting techniques, enhancing their ability to visualize and represent complex shapes in a virtual environment.
- The activity introduced them to texture mapping and material application, allowing for realistic surfaces and finishes on 3D models.
- The student learned about lighting and rendering concepts, crucial for presenting their artwork in a visually compelling way.

## Information and Communication Technology (ICT)

- The student has gained practical skills in navigating and utilizing advanced software interfaces specific to 3D design tools.
- They developed problem-solving abilities while troubleshooting software functions and optimizing model designs within Blender's environment.
- They learned file management and export processes necessary for saving and sharing digital projects across platforms.
- The activity enhanced their competence in using computer graphics hardware and software synergy for creative production.

### Mathematics

- They applied geometric concepts by manipulating shapes, understanding vertices, edges, and faces in three-dimensional space.
- The student worked with spatial reasoning skills to position objects accurately within a virtual 3D grid system.
- Scaling and proportion principles were practiced while resizing models and maintaining the correct dimensional relationships.
- They explored coordinate systems and transformations such as rotation, translation, and scaling within the digital workspace.

### Tips

To deepen learning, encourage the student to undertake project-based activities such as designing simple animations or creating 3D printable objects, which integrate creativity with technical skills. Supplement Blender practice with tutorials focused on animation and physics simulation to enhance understanding of movement and interaction in 3D spaces. Encouraging collaboration or sharing projects on platforms like Sketchfab can boost engagement and provide constructive peer feedback. Additionally, pairing Blender use with related subjects like computer programming or art history can broaden contextual knowledge and inspire innovative work.

### **Book Recommendations**

- <u>Blender For Dummies</u> by Jason van Gumster: A comprehensive beginner-friendly guide to learning Blender's interface, modeling, animation, and rendering tools.
- <u>The Complete Guide to Blender Graphics: Computer Modeling & Animation</u> by John M. Blain: An in-depth resource covering fundamental and advanced Blender techniques for creating professional-quality 3D graphics.
- <u>Digital Modelling</u> by William Vaughan: Focuses on the artistic and technical aspects of 3D modeling, emphasizing practical skills applicable within Blender.

Mastering Blender: Educational Insights into 3D Modeling, ICT Skills, and Mathematical Concepts / Subject Explorer / LearningCorner.co

### **Learning Standards**

- Art and Design (KS2-3): Use a range of techniques and media to create art, including digital media (National Curriculum Art & Design)
- Computing (KS2-3): Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems (National Curriculum Computing, code KS2-3 D2.1)
- Mathematics (KS2-3): Describe positions on the full coordinate grid (all four quadrants) (National Curriculum Mathematics, code KS2-3 M4)
- Mathematics (KS2-3): Understand and use the properties of shapes, including 3D shapes (National Curriculum Mathematics, code KS2-3 M3)