The Science Behind PIXAR
K-12 EDUCATOR'S PREVIEW

ABOUT THE EXHIBIT
March 12 – September 5, 2016
Recommended for Grades 3–12

Learn about the filmmaking process through hands-on activities inspired by some of Pixar’s most treasured films, from Toy Story to Pixar’s newest film, Inside Out. This exhibition offers an unparalleled view of the production pipeline and concepts used at Pixar every day.

Participate in fun hands-on activities, listen to firsthand accounts from members of the studios’ production teams, and even come face-to-face with re-creations of your favorite Pixar film characters, including Buzz Lightyear, Dory, Mike and Sulley, Edna Mode, and WALL•E!

During your visit, students will:

• Discover how science, technology, engineering, and math (STEM) are applied to create movies.
• Explore how computers make digital films possible.
• Learn about the many careers associated with digital filmmaking.

After your visit, students will:

• Appreciate the broad diversity of careers in STEM.
• Understand how collaborative the filmmaking process is.
• Have a new vision for a possible career path.

This exhibition features eight distinct sections, each focusing on a step of the filmmaking process. In these areas, your students will:

- MODELING
  Use mathematics to create virtual 3D models.

- LIGHTING
  Manipulate light to enhance a scene’s mood or believability.

- SETS & CAMERAS
  Create a 3D scene through virtual cameras.

- ANIMATION
  Animate virtual 3D characters and sets.

- RIGGING
  Explore how movement is made possible through rigging.

- SIMULATION
  Apply mathematical equations to create complex scene simulations.

- SURFACES
  Control the appearance of surfaces by applying properties of light.

- RENDERING
  Render a virtual 3D scene into a 2D image for the theater.

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LEARNING GOALS

Knowledge, awareness, and understanding

• Students will demonstrate increased knowledge and understanding of the core STEM content that underlies computer animation.

• Students will demonstrate awareness of the interdependence of art and STEM at Pixar.

• Students will be able to systematically approach complex problems and challenges by breaking them down into manageable parts.

Attitude

• Students will have an increased positive attitude that they can learn about STEM and computer science, and they will gain appreciation for the creativity of careers in those fields.

Skills

• Students will demonstrate engagement in STEM and computer science process skills that are used at Pixar.

A complete K-12 Educator’s Guide will be available when the exhibit opens.

CURRICULAR STANDARDS

An exploration of The Science Behind Pixar can help students achieve learning objectives as called for by the national standards.

National Science Education Standards
3-12: Science & Technology, Science in Personal & Social Perspectives

Next Generation Science Standards
3-5: Engineering Design
MS & HS: Engineering, Technology, & Application of Science

Benchmarks for Science Literacy
3-12:
3. The Nature of Technology
3b. Design & Systems
8. The Designed World
8e. Information Processing

Common Core – English Language Arts
3-5: Reading Informational Text
6-12: Literacy in Science & Technical Subjects

National Core Arts Standards – Visual Arts
AS7: Perceive & analyze artistic work
AS8: Interpret intent & meaning in artistic work
AS10: Synthesize & relate knowledge & personal experiences to make art
AS11: Relate artistic ideas & works with societal, cultural, & historical context to deepen understanding

This exhibition was developed by the Museum of Science, Boston in collaboration with Pixar Animation Studios. Images © Disney / Pixar

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