From Observation to Immersion —— Emotional Engagement through Multimodal Interaction



Image 1: Girl watching archival spaceflight footage (narrative immersion)

Immersive narrative zone where children engage with archival spaceflight footage.



Image 2: Child using a telephone-style interface (sensory integration)

Audio-augmented interface enriches the storytelling of individual exhibits.



Image 3: Sound mixing console paired with video playback (visual-auditory hybrid experience)

Sound editing station engages older users with tactile, auditory, and cinematic interaction.

Roleplay and STEM Simulation —— Enhancing Motivation through Task-Based Design



Image 4: Boy using orange console in an industrial simulation (task-based learning)

STEM simulation encourages hands-on experimentation within an authentic industrial scenario.



Image 5: Girl mixing virtual medications in a lab scenario (medical roleplay)

Hands-on medical scenario invites users to roleplay as lab technicians.



Image 6: Interactive interface exploring the nervous system (cognitive depth)

Complex interface encourages users to explore detailed anatomical systems through touch and animation.

Collaboration and Career Exploration —— Supporting Social and Self-Directed Learning



Image 7: ROV multi-screen setup with parental guidance (collaborative learning)

Multi-screen control hub simulates a deep-sea ROV environment, encouraging collaborative exploration.



Image 8: Two children using a shared industrial touchscreen (co-use interface)

Collaborative industrial UI promotes cooperative learning and problem-solving among children.



Image 9: Red touchscreen offering career preference pathways (self-exploration and identity)

Interactive career interface invites children to explore their personal interests and strengths.

Museum Field Trip Reflection – Science Museum

Visiting the Science Museum revealed how physical spaces can be transformed into dynamic user experiences. The second-floor exhibitions, in particular, demonstrated how interaction design shifts audiences from passive spectators to active participants. Through tactile controls, intuitive colour-coding, and simulated real-world scenarios, the museum constructed a narrative-driven, hands-on engagement —— one that empowers users not only to consume information but to physically and emotionally inhabit scientific roles.

The material composition and interface logic of each installation contributed to this immersion. Touchscreens were paired with tangible props and sensory feedback, lowering cognitive barriers and enabling spontaneous interaction. These design choices reflect a clear commitment to accessibility and experiential learning, particularly for children. Yet this strength also reveals a tension: the heavy reliance on gamified, child-oriented interfaces raises critical questions about depth. Does simplifying science into interactive play risk diluting its complexity? Might the emotional excitement overshadow critical understanding?

While the museum succeeds in engaging young audiences, adult visitors often found themselves relegated to the role of observers — their experience flattened by a lack of layered content or differentiated pathways. This highlights a missed opportunity for multi-generational design thinking. Designing exclusively for one audience segment, even with good intent, can inadvertently reduce the inclusivity and interpretive richness of the overall space.

This field trip underscores a broader challenge in contemporary museum UX: balancing short-term emotional impact with long-term cognitive engagement. A future-facing museum interface must move beyond surface-level entertainment to support reflective, exploratory learning across diverse audience needs. The goal is not just accessibility, but meaningful engagement – where curiosity leads to contemplation, and participation fosters lasting insight.

For designers, this means rethinking how digital and spatial narratives can adapt in complexity, encourage critical thinking, and accommodate diverse cognitive and emotional modes. Museums, after all, are not just places for knowledge transfer, but for experiential transformation.