XR Kindle Redesign: Prototype 2 Testing Plan - VR Implementation

Project Pitch

This project is Amazon Kindle but using XR for creating fully immersive, customizable reading environments where users leverage Meta Quest hand tracking and controller interactions to navigate 3D library spaces, manipulate environmental elements through spatial gestures, and construct personalized reading workspaces that adapt to their preferences in real-time.

Testing Objective

From my above concept, I have identified the effectiveness of VR-native interactions for book selection, environmental control, and spatial workspace customization that needs testing. This test aims to discover whether Meta Quest controller and hand tracking interactions provide intuitive, comfortable, and engaging methods for users to perform core reading preparation tasks, and how successfully users can leverage VR's spatial affordances to create personalized reading environments.

Testing Methodologies

This testing plan will use controlled task-based usability testing with think-aloud protocol and post interview, and quantitative performance metrics to evaluate a functional VR prototype made in Unity with Meta SDK integration running on Meta Quest headsets.

Prototype Description/Requirements

The prototype was designed to provide comprehensive VR interactions that test the core assumptions of immersive reading environment creation through three distinct interaction paradigms. It features a fully navigable VR library with physics-based book grabbing using controller interactions, poke-interactable audio controls for environmental ambiance, and a workspace area with grabbable, scalable objects (picnic rug, modular tree components, basket) that users can spatially arrange to construct their ideal reading environment using natural VR gestures.

Data Collection Method

During the testing process, I will be recording screen capture of VR headset view, logging task completion times using stopwatch, documenting interaction errors and recovery attempts, capturing think-aloud verbal feedback through audio recording, and conducting structured post-test interviews with standardized questions to document comprehensive quantitative and qualitative results.

Testing Setup

- Meta Quest 2/3 headset fully charged and calibrated
- Unity prototype built and deployed to headset

- Screen recording software configured for headset mirroring
- Stopwatch/timer for task duration measurement
- Audio recording device for think-aloud and interview capture
- Observer notebook for behavioral annotations
- Post-test interview question sheet prepared
- Backup headset available in case of technical issues

Testing Process (Schedule/Time: 5 minutes per participant)
Pre-Test Setup (30 seconds)

Headset fitting and safety briefing - Ensure comfortable fit, explain VR safety, get verbal consent

Task Execution Phase (3 minutes)

Task 1: Environmental Assessment & Book Selection (60 seconds)

Instructions: "Take in your surroundings and describe what you see. Then use the controllers to go to a bookshelf and grab a book you want to read."

Success Criteria: User successfully navigates VR space, identifies library elements, and completes book grab interaction

Metrics: Time to complete grab, number of grab attempts, spatial orientation success

Think Aloud:

Observations & Quotes

User's thought process:

Notable quotes:

Struggles/Confusion points:

Task 2: Environmental Audio Control (45 seconds)

Instructions: "Look for the poke-interactable element that controls audio. Interact with it to test environmental sound control."

Success Criteria: User locates poke target, successfully triggers interaction, audio feedback responds appropriately

Metrics: Discovery time, interaction accuracy, user satisfaction with feedback

Think Aloud:

Observations & Quotes

User's thought process:

Notable quotes:

Struggles/Confusion points:

Task 3: Workspace Customization (75 seconds)

Instructions: "Navigate to the green workspace area. Grab the items on tables (rug, tree parts, basket), scale them as desired, and arrange them to create your ideal reading environment."

Success Criteria: User grabs minimum 2 objects, demonstrates scaling interaction, places objects in workspace area

Metrics: Object manipulation success rate, scaling interaction completion, spatial arrangement coherence

Think Aloud:

Observations & Quotes

User's thought process:

Notable quotes:

Struggles/Confusion points:

Post-Test Interview (90 seconds)

Post-Test Interview Questions

Interaction Effectiveness

Q1- Rate the naturalness of the book grabbing interaction from 1-10. What felt most/least natural about it?

Q2- How intuitive was the poke interaction for audio control? Did the visual feedback match your expectations?

Q3- Which object manipulation (grab/scale/place) felt most comfortable? Which was most challenging?

Spatial Understanding & Comfort

Q4- How comfortable did you feel navigating the VR space? Any disorientation or motion sickness?

Q5- Did the workspace customization feel meaningful? Could you envision reading in the environment you created?

Comparative Assessment

Q6- Compared to traditional reading apps, what unique value does this VR experience offer?

Q7- What would you change about these interactions to make them more intuitive?

Future Feature Validation

Q8- If you could add one gesture or interaction to enhance this reading preparation experience, what would it be?

Success Metrics & Evaluation Criteria

Quantitative Benchmarks

Task 1: >80% success rate, <45 seconds average completion
Task 2: >90% discovery success, <30 seconds interaction completion
Task 3: >70% multi-object manipulation success, <60 seconds for basic arrangement

Qualitative Indicators

Comfort: <2 reports of significant discomfort or motion sickness
Engagement: Positive verbal feedback during think-aloud
Intuitiveness: <3 attempts needed for core interactions
Spatial Coherence: Users can articulate their workspace design choices

Risk Mitigation & Additional Considerations
Technical Contingencies

Headset malfunction: Backup device ready for immediate swap
Tracking issues: Pre-calibrated guardian boundaries, adequate lighting
Performance drops: Prototype optimized for consistent framerate

Participant Comfort

Motion sickness: Immediate stop protocol if participant reports discomfort

Enhanced Data Collection (if time permits)

Error categorization: Distinguish between user error vs. system limitation
Preference ranking: Have participants rank interaction types by preference