

Collaborative Design Review in Virtual Reality

Using Arkio for Spatial Design Critique

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| Course | ARCH-301: Advanced Design Studio |
| Module | Spatial Design and Collaboration |
| Duration | 90 minutes |
| Level | HBO Year 3 / Bachelor Architecture |
| Group Size | 12 students (4 groups of 3) |
| Location | VR Lab (Room B2.14) |

Learning Objectives

By the end of this session, students will be able to:

1. Navigate and manipulate 3D architectural models at 1:1 scale in VR
2. Conduct structured design critiques using spatial markup tools
3. Communicate design intent effectively within an immersive environment
4. Identify spatial issues that are difficult to perceive in 2D drawings
5. Collaborate synchronously with team members in a shared virtual space

Required Equipment

- 4x Meta Quest 3 headsets (charged, with Arkio installed)
- Student project files exported from Revit/SketchUp (prepared in advance)
- Backup laptop with Arkio desktop version
- Critique evaluation forms (digital, via MS Forms)

Pre-Session Preparation

Instructor Tasks (1 week before)

- Verify all headsets are updated and Arkio licenses are active
- Create Arkio project spaces for each student group
- Import student design files and verify scale/orientation
- Prepare example markup annotations for demonstration
- Send students the VR safety guidelines document

Student Tasks (before session)

- Export current design iteration to FBX or GLB format
- Review Arkio quick-start video (15 min, provided via Canvas)
- Prepare three specific design questions for peer feedback

Session Structure

Part 1: Introduction and Safety Briefing (15 minutes)

| Time | Activity |
|------|--|
| 0:00 | Welcome and session overview |
| 0:05 | VR safety briefing: guardian boundaries, motion sickness awareness |
| 0:10 | Demonstrate headset fitting and controller basics |

Key points to cover:

- Establish guardian boundaries before entering VR
- Take breaks if experiencing discomfort
- Verbal communication remains essential even in VR

Part 2: Arkio Familiarization (20 minutes)

Students don headsets and complete guided exploration:

Navigation basics (5 min)

- Teleportation movement
- Scaling the model (miniature to 1:1)
- Fly-through mode for overview

Annotation tools (10 min)

- Placing spatial markers
- Drawing 3D markup lines
- Adding voice notes to locations

Collaboration features (5 min)

- Seeing teammate avatars
- Using the laser pointer for directing attention
- Synchronous vs. asynchronous review modes

Part 3: Structured Design Critique (45 minutes)

Each group reviews one project using the following protocol:

| Phase | Duration | Activity |
|------------------------|----------|---|
| Orientation | 5 min | Designer gives verbal tour at miniature scale |
| Immersive walkthrough | 10 min | Group enters at 1:1 scale, designer leads |
| Individual exploration | 10 min | Reviewers explore freely, place markers |
| Discussion | 15 min | Group gathers, discusses marked locations |
| Summary | 5 min | Key feedback points documented |

Critique Focus Areas:

- **Spatial flow:** How does movement feel between spaces?
- **Light quality:** Are daylight levels appropriate for intended use?
- **Human scale:** Do ceiling heights and openings feel correct?
- **Materiality:** How do proposed materials read at full scale?
- **Accessibility:** Can all users navigate the space comfortably?

Part 4: Debrief and Reflection (10 minutes)

Remove headsets and discuss as full group:

- What spatial issues became apparent only in VR?
- How did the immersive review differ from screen-based critique?
- Which markup tools were most useful for communication?

Assessment Criteria

| Criterion | Weight | Description |
|---------------------|--------|--|
| Engagement | 25% | Active participation in both giving and receiving feedback |
| Spatial observation | 30% | Quality of issues identified through VR exploration |
| Communication | 25% | Clarity of verbal and visual annotations |
| Reflection | 20% | Thoughtfulness in debrief discussion |

Common Issues and Solutions

| Issue | Solution |
|-------------------------------------|--|
| Student experiences motion sickness | Immediately remove headset, sit down, focus on fixed point |
| Model appears at wrong scale | Use Arkio's scale adjustment, verify export settings |
| Audio cutting out | Check headset volume, verify Wi-Fi connection |
| Student unfamiliar with controllers | Pair with experienced peer, use simplified control scheme |

Follow-Up Activities

Same Week:

- Students export their markup annotations as PDF reports
- Upload reflection (300 words) on VR critique experience to Canvas

Following Session:

- Incorporate peer feedback into design revision
- Present before/after comparison showing changes made

Resources

- Arkio Quick Start Guide: <https://www.arkio.is/learn>
- VR in Architecture Education (reader, Canvas)
- Department VR Lab booking system