EE267W Final Project
Virtual Reality Simulations for Junior Associate Legal Training

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Abstract

Within the space of legal strategy training, the need for low-cost, real life simulations is becoming more prominent. This study investigates the impact of virtual reality's (VR) immersive environment and repeatability to train evidence-based deposition strategy and critical thinking skills. Under the context of a simulated series of lawsuits Big Bad Management Company (BBMC) v. People of Cardinal City, the VR application targets legal-skills instruction, a domain traditionally limited to passive video case studies or text-only based learnings. We hypothesize that the use of immersive VR environments for legal litigation practice opens the door to more realistic training and increased critical thinking/learnings that can be applied to future real life scenarios. Participants will engage in pre-testing to capture their initial thought process throughout a series of example case depositions. These responses are then input into the VR simulations, which the participants walk through to see their decision making unfold in real time. While decision making accuracy was a tracked variable in the study, observations on the participants changed behavior and learnings through multiple iterations of the simulations was the main focus. When evaluating a learning tool in a space (i.e. the legal field) where there is only one opportunity to get a desired outcome (i.e. catching the opposing side in a confession), repetitive practice and working through multifaceted angles of a situation are desired qualities, which VR provides. This gives high confidence in the future possibilities of VR as a learning tool application within this space especially as this project acts as a proof of concept/early stage prototype.

1. Introduction

The first year at a corporate law firm is notorious for its steep learning curve. Incoming junior associates are immediately immersed in high-stakes tasks—drafting discovery requests, negotiating settlements, or presenting arguments in court—yet often receive only minimal face-time with senior partners. Traditional mentoring models struggle to scale when billable-hour pressure limits the availability of experienced attorneys. At the same time, advances in commodity head-mounted displays (HMDs) and the public availability of millions of digitized court records create a new opportunity: *immersive, asynchronous* training that junior associates can access at their own pace while still experiencing the psychological pressure of real legal work.

This project explores a lightweight virtual-reality (VR) platform that lets junior associates "rehearse" both pre-trial interactions (client interviews, partner prep meetings) and trial- style presentations inside a single simulation. Prior VR courtroom systems typically rely on scripted scenarios and human facilitators, which limits adaptability and scalability. Our approach collects relevant decisions *before* the simulation begins through a browser-based questionnaire, streams them into a branching narrative, and then renders the entire experience from a first-person perspective on a self-contained HMD. This design both avoids expensive hand-tracking hardware and ensures that low-cost stand-alone headsets (e.g. Meta Quest 2) remain sufficient.

Contributions. We claim four contributions:

1. *Scenario Model.* An asynchronous decision-tree architecture that covers partner briefings, client meetings, and an initial board-room style hearing.

2. *Lightweight Deployment.* A zero-controller interface that runs on commodity HMDs, improving hardware accessibility for law-firm training labs.

3. *Immersive Environment.* Integrated visual stressors (360 degree cube-map imaging for surround visuals) that mimic environmental pressure/input related to the given case.

4. *Empirical Evaluation.* A two-round user study measuring (i) legal-reasoning accuracy, (ii) simulation repetition, and (iii) self-reported confidence compared to a text-only baseline.

By combining a pre-loaded decision capture with an immersive playback, we demonstrate that VR can bridge the gap between the limited availability of senior mentorship and the high cognitive demands faced by new associates. We also showed VR's impact as a low cost and effective tool for critical thought mapping given the ability to repeat simulations over and over again.

2. Related Work

2.1. VR Courtroom Simulations

Using VR as a tool within the legal field has been implemented before but has experienced limitations in its previous applications. When we look at courtroom simulations there are two examples that showcase what happens when we utilize this technology. San Sebastian *et al.* (2022) developed an AI-assisted VR courtroom at a Chilean university that allowed students to practice trial procedures with hand-gesture controls [4]. The system increased procedural-knowledge scores by 35% but offered no individualized feedback on argument quality. Additionally, Smith and Lee's "Immersive Justice" platform (2021) reduced trial-preparation time by 40% through scripted VR hearings, yet its reliance on fixed dialogue trees limited adaptability to a trainee's specific needs [5].

2.2. Hybrid VR and In-Person Modules

Research on using VR has also been a supplement to in-person/real life work. Lawson and Mitchell from RMIT University introduced negotiation modules that blended VR role-play with live debrief sessions [3]. From this work, they saw participants achieved 28% fewer procedural errors than control groups. However, the methodology required significant facilitator time, which prevents and constrains the possibility of scaling this to high-volume law-firm settings. A broader perspective is offered by Jongbloed, Chaker, and Lavoué in their systematic review Immersive Procedural Training in Virtual Reality [2]. After reviewing 56 studies across medicine, aviation, and law, the authors conclude that VR consistently improves task accuracy and retention but note two recurring limitations: 1) dependence on instructor-mediated feedback loops, and 2) costly and ineffective deployment.

2.3. AI-Driven Decision-Tree Platforms

Another aspect that was touched upon in the VR courtroom simulation works that we also utilize in this project is decision tree platforms. Other groups have looked at incorporating AI through products such as *Hotshot Legal* [1]. These drive text-based scenarios for junior associates to practice everyday decisions. However, the lack of specialized hardware leads to a reduced long-term skill retention, as evident from the user-experience data.

2.4. VR for Ethical Reasoning

Prior research by van Dongen at the University of Utrecht's 2025 VR pleading exercises exposed students to decision making narratives based on privilege waivers and conflicts of interest [7]. This opens the door to investigating ethical reasoning and critical decision making within realistic legal situations. They achieved a 94% satisfaction rate based on their metric for measuring ethical reasoning. However, the experience lacked stress realism. This is where integrating scene crafting can create approximate real-world intensity.

2.5. Limitations of Existing Work & Contribution of Present Study

Across these studies, VR shows promise for procedural learning, ethical reasoning, and scenario-based practice, yet current systems (i) lack adaptability, (ii) depend heavily on human facilitation, or (iii) fail to recreate the pressure junior associates face in practice.

To address these gaps, our project delivers a first-person, branching deposition simulation that accomplishes the following:

- Captures user decisions *before* putting on the headset, which eliminating the need for hand-held controllers,
- Runs on a single HMD to minimize hardware barriers and accessibility concerns, and
- Allows for the possibility of scaling up to high-volume, convoluted casing from an isolated boardroom scenario to being on the bank of a polluted river while preserving immersive pressure.

This paper is striving for a proof of concept for a cost-effective, repeatable legal-strategy training tool.

3. Methodology & Implementation

3.1. Designing User Experience & Simulation Cases

Given the vast possibilities of where VR can be implemented as an immersive training tool, we wanted to showcase the proof of concept with the 1:1 interaction style of a deposition. Depositions are crucial in all legal cases regardless of if the case goes to trial, and what makes this such an excellent learning opportunity is how the user (i.e. acting principal attorney) is entirely in charge of driving the conversation and the output that follows. Depositions and the style of questioning can entirely make or break a winning case, so there is lots of room for junior attorneys to learn from experienced attorneys who know what to look out for.

For this reason and given the potential scope of this project, quantity and capturing different kinds of cases with

the same structure was integral to whether VR was an effective medium. We outlined an overarching structure of a major legal battle that multiple and a variety of lawsuits can fall under. This is where BBMC v. People of Cardinal City comes in. Cardinal City residents have filed a sweeping civil action against Big Bad Management Company (BBMC)—the firm in charge of hazardous-waste logistics and labor oversight for the local industrial hub.

This project focused on three different lawsuits. Between them, a format was developed. There is an overarching lawsuit, a witness related to the background of the lawsuit, the user is the principal attorney driving the deposition and question, and there are multiple ways to parse through the questioning style. The three lawsuits were related to 1) a refinery malfunction that released a dense yellow haze over the neighboring community, 2) a recently "upgraded" biometric time-clock system at BBMC's mega-warehouse has been rounding down hours, forcing employees to work overtime without pay, and 3) accusing BBMC of polluting a main waterway.

Within each of the cases, there were three prompting questions with two different options per question round that needed to be selected by the user. This allowed for eight different possible combinations of questioning, which aligned with the simplicity of the hypothetical cases. The questioning options at each stage did not have to build off of the previous line of questioning, which showcased the proof of concept that eventually we could scale an example with more questioning rounds and the possibility of rabbit holing into a line of questioning.

3.2. Pre-testing Data Collection

In order to reach the objective of a hands-free simulation and accessibility motivations, we asked the users to fill out a Google Form, which was filled out once per case per simulation. Before selecting the decisions for a specific case, a background on the case was provided for the user to read. This form was used throughout the entire user study, which involved coming back to the form and filling it out multiple times.

3.3. Implementation of Immersive Scene

In order to create the realistic scene related to each of the three cases, we leveraged a cube-map pipeline to wrap each deposition in a fully spherical backdrop that instantly signals the stakes of the case. For the river-pollution scenario, the user is positioned on the bank of a polluted waterway/river that the case is talking about as evident from Figure 1. The display visual provides a faint yellow cast that makes the situation about a sulfurous haze more believable. Pilot users later remarked that this color wash "felt like standing inside the evidence," making them more determined to direct their questioning toward uncovering the truth of BBMC's actions. This differed greatly from the lack of response/feedback on the believability of the cases when users filled out the Google Form for pre-test data collection. Before any dialogue begins, the simulation gives the users time to explore the visuals of the space: as users swivel their heads they discover subtle environmental cues and can conceptualize what the case is about. This makes a large impact on the background of the case which may have been skimmed during the pre-test form. Because a 360° view can

Figure 1. Cube-mapped river-pollution environment used in River Microplastics Dump Case

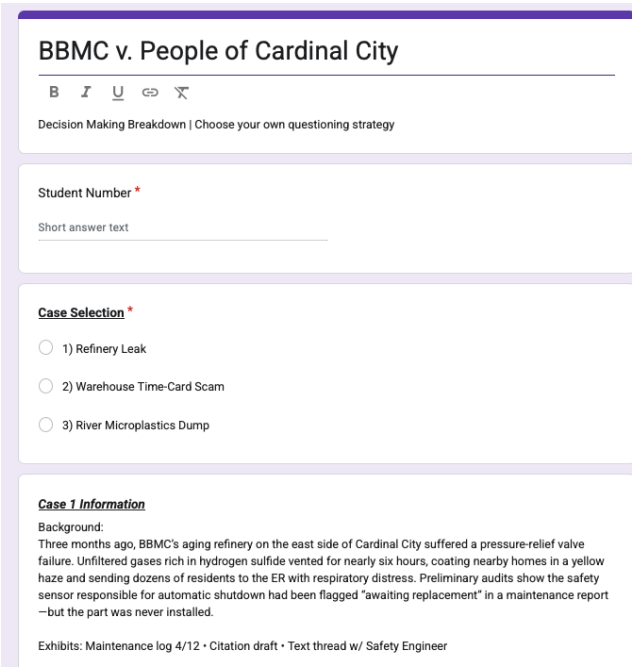

Figure 2. Google Form format for user input

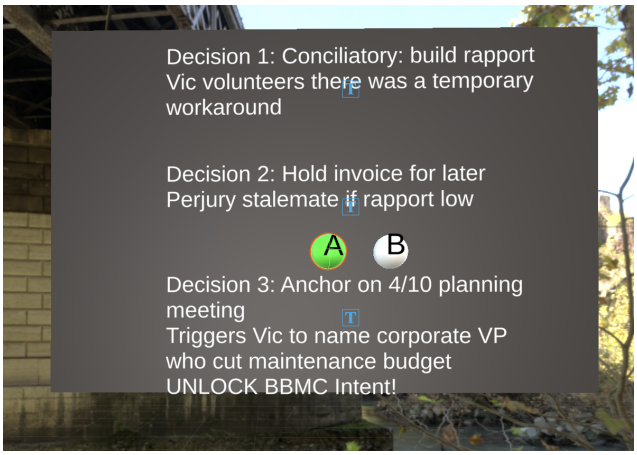

Figure 3. River Microplastics Dump Case: Decision Mapping example

easily become distracting, we layered low-contrast motion graphics and contextual text only within the central field of view; peripheral elements remain static including the background. This allowed us to leverage a sense of depth while quietly guiding attention to the decision making that user selected.

We start off with priming the user with the same background information that was provided in written form on the Google Form, as evident from Figure 2. This is followed with text related to the activity and goal of the activity at hand, which moves in and out of the frame based on the timing of the user's reading. After providing the context to the user, their actual decision making is walked through with the physicalization of their decision making via Selection A and Selection B sphere. The selected choice is highlighted in green and the result of that decision comes into frame, as seen in Figure 3. This is the information not provided in the pre-test form in order to not give away the "correct" decision path. Reactions from the witness and details about their responses are displayed as text. The three questioning decisions are staggered on the same view plane, so the user can reflect upon their decision path after the simulation is done.

3.4. Pre-testing Data to Simulation Pipeline

Given the storytelling nature of the simulation and the fact that the students selected their answers in the Google form prior to wearing the HMD, the scene objects were clustered and coded into two parts. The first part was the introduction with the context of the case and simulation details. This was consistent between the cases other than the case specific details being changed. The second part was the decision making text with reaction responses and the selection spheres. In the Inspector panel of the scene objects, we utilized public variables for the decision selection (i.e. in the form AAA, AAB, ABB, and every other possible combination). This would then be connected to its corresponding reaction response text. This was designed for demonstration purposes, so for this proof of concept, a separate individual would be triggering each step based on the user's feedback on when they were done reading/ready for the next step. The trigger variable can be seen in Figure 4.

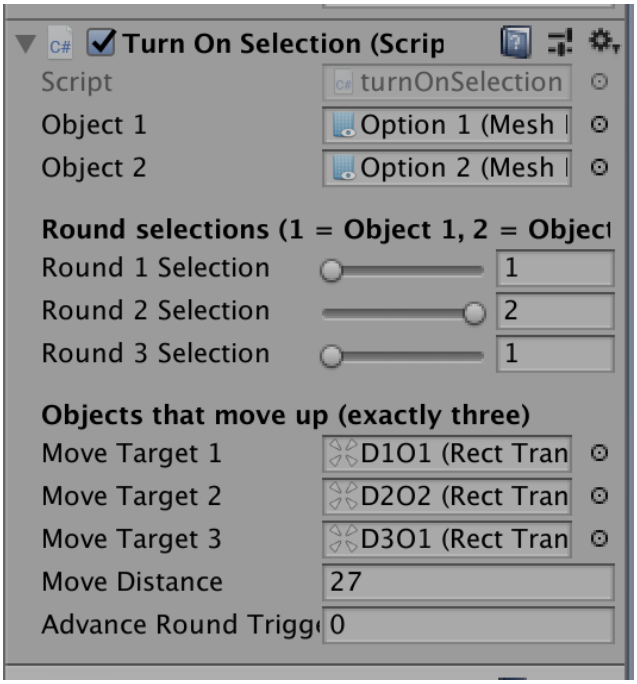

Figure 4. Scene Object Variable Settings

3.5. User Study Process

With the participation of 10 law students from the Stanford Law School, each of the students filled out the Google form before running through the simulation per case. They tracked their decision making and each iteration would reflect their new decision making. They were allowed to run through the simulation, new decision selection, and fill out the Google Form as many times as they felt sufficient for their learning as evident from Figure 5. Post simulations, the users provided feedback on their thoughts about the learnings they achieved, the simulations as a whole, the content of the cases, improvements for the future, and general feedback. Throughout the simulations, the facilitator would time the time between certain steps: 1) reading background and entering decision making choices in the Google Form, 2) entering the scene before reading the introduction information, 3) reading the introduction information, and 4) reading the final decision making map before leaving the simulation.

4. Results

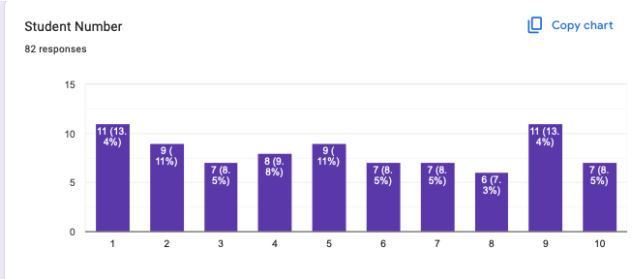

Figure 5. User Study Data: How Many Times Each Student Redid Their Decision Making Process

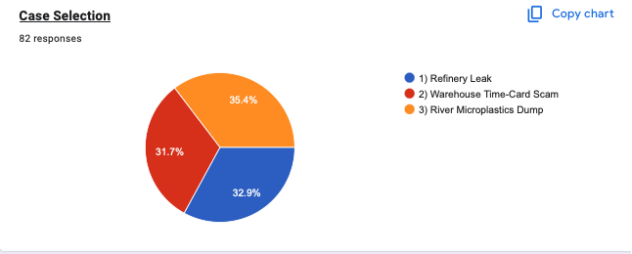

Figure 6. User Study Data: Balance of Going Through 3 Simulation Cases

From the pre-test questionnaire, we could understand the user's engagement for each run and each case. This helps contextualize the impact of the tool from a learning perspective. Although there exists a single optimized path to reaching the conclusion that BBMC is guilty, the 10 participants iterated through the first case about the refinery leak 27 times, the second case about the timecard scam 26 times, and the third river microplastics dump case 29 times, as seen in Figure 6. 100% of the users initiated at least one voluntary replay (i.e. anything beyond the first iteration), and 80% of users iterated through all cases at least three times. When compared against the most optimized path indicated strategic exploration, we see the following breakdown for each of the cases in Figures 7, 8, and 9. Some interesting observations that stood out between the case decision breakdowns were the following:

- Case 3 had the largest skew toward selecting the most optimized decisions yet had the highest number of simulation iterations
- Out of the 3 cases, Case 2 observed question selections that were not leaning heavily in one direction but rather split including an exact 50% for question 3.

Qualitative interviews reinforced these quantitative observations. Users reported experiencing a "curiosity to try

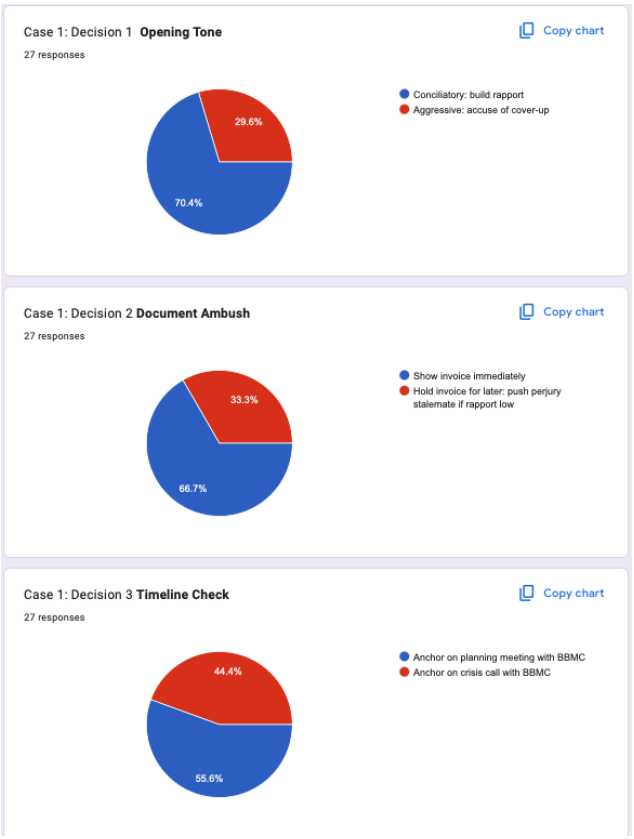

Figure 7. User Study Data: Case 1 Decision Breakdown

different approaches," which was motivated by seeing the decision making within the simulation and specifically accrediting the floating selection spheres as an engaging feature. Many also commented on enjoying the hands free nature of the simulation. It "felt like a movie" that was both engaging and educational because it "focused on the facts, not the tech." From a systems perspective, the step by step pace of the simulation was individualized, which helped users feel in control of the simulation. When looking at both the qualitative and quantitative results, the data shows that pre-testing data collection, immersive scene priming, and limitless replay can deliver high-engagement legal-strategy training, which address the project goals for being accessible and effective as a learning tool.

5. Analysis & Evaluation & Comparison to other Methods

Our implementation of the VR deposition strategy simulation is different from the methods discussed in the related works. While San Sebastian et al. delivered a single scripted courtroom and Smith & Lee relied on fixed dialogue trees, we introduced a user-tailored decision process that allowed each participant to construct one of eight

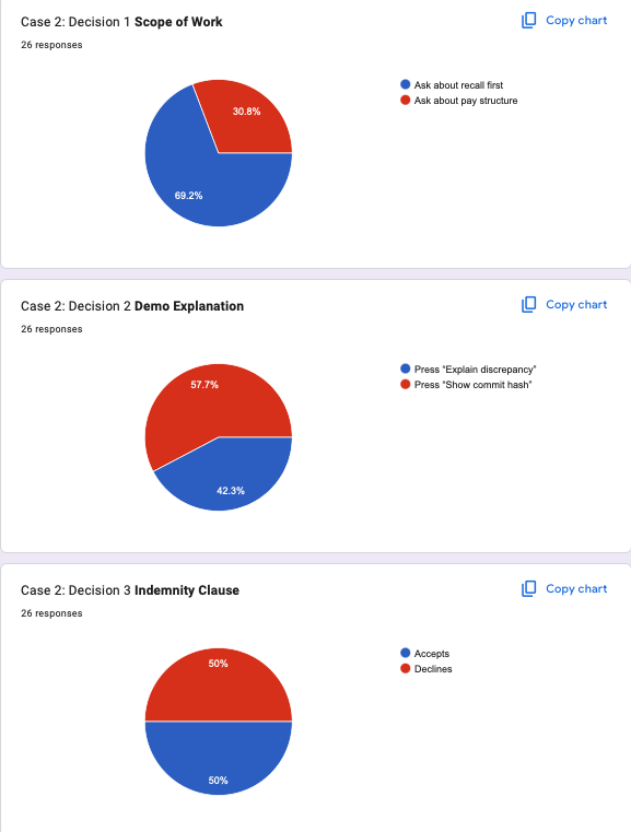

Figure 8. User Study Data: Case 2 Decision Breakdown

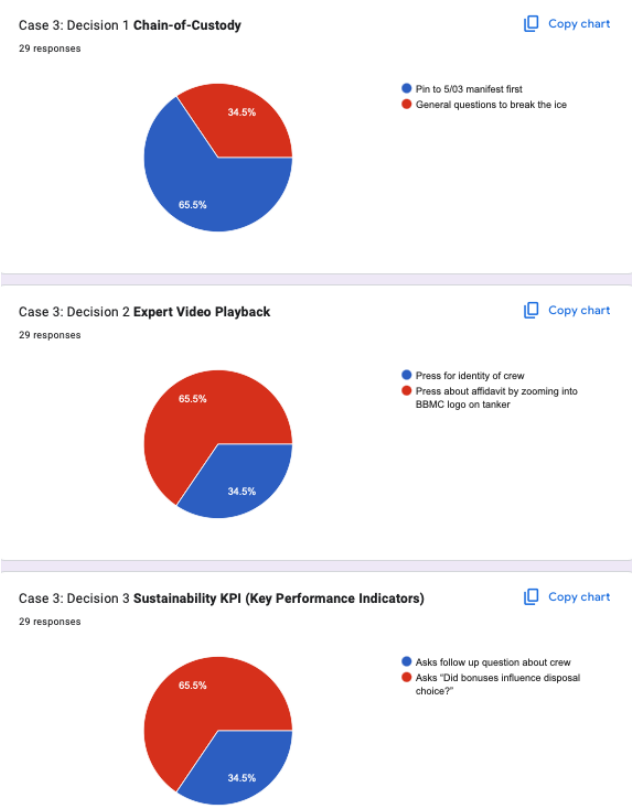

Figure 9. User Study Data: Case 3 Decision Breakdown

question strategies per lawsuit before the headset was worn. While eight different paths per case may not be as extensive as the other works, it was intended to show how users, when given the opportunity to learn from their previous decision making and when faced with reviewing their choices, drive learnings and critical thinking skills that go beyond reaching a directed answer. User retention like this was not observed in products like Hotshot Legal, which demonstrates the value of allow the users to drive their own learnings. One of the biggest fundamental differences of this project/study and the previous works mentioned is that this project scope was intended as a proof of concept. It was successful in showing how the use of VR as an engaging, immersive, and realistic tool can expand to different applications (i.e. contract negotiations) and scale to high-volume law firms and cases (i.e. including hundreds of cases with more decision making paths and complicated exhibits). This directly comes in conflict with the facilitator bottleneck present in hybrid modules such as RMIT's negotiation labs. For our project, when users complete a run, the Google Form can be filled out once more and iterated as many times as deemed useful to the user. Eventually, the need for an operator on our platform will move to being entirely done in the HMD unit. By blending pre-testing data collection, limitless replay, and low-cost delivery, this project fills the individualized-learning gap that constrained other works in VR and hybrid legal-training tools. As a proof of concept, the possibilities of tailored strategy legal practice can be achieved without expensive controllers or overmanagement tooling.

6. Discussion

6.1. Experiment Analysis

While the basis of the prototype was limited to a storytelling VR interface, our iterative experiment across three different lawsuit simulations provided insights that identified VR as an immersive and repetitive learning tool, as intended. This project relied more heavily on qualitative data rather than quantitative data because the motivation was learning critical decision making, which isn't limited to the most optimized sequence of decision making.

Despite the fact that users could get to the final answer where BBMC were pinpointed as guilty through the deposition, the participants were intentionally allowed to continue with the simulations until they felt it was enough to stop.

This was evident from the collected pre-test data since almost all participants continued with at least one more simulation iteration after reaching the final "correct" decision. From this behavior, we can observe and conclude that this tool, even at a primitive stage of development, invoked curiosity and thought that triggered interactions beyond the originally stated goal of finding BBMC guilty. Verbal feedback from users additionally provided confidence to this conclusion with statements like "I wanted to see whether a softer tone would still break the witness" or "let me test if presenting the invoice later would change the confession dynamics."

The biggest takeaway from this project was the impact of visualizing one's decision making in a VR space. All of the initial thinking and mental priming was done outside of the HMD. Therefore, the participants' drive to try another iteration was motivated from the immersive features like the cubemap and mapping decision text in the simulation. The idea of environmentally priming the users with a cubemap backdrop presented a finding that the scene setting can change how people engage with text. This is evident because the text from the Google Form was presented again in the simulation under the Situation prompting. We noticed that users still took the time to read through the introduction steps in the VR space while the Google Form was breezed through more quickly before getting back into the headset. Informally, participants reported that the ability to "look around and notice details the second time" helped reframe their strategy and kept the experience from feeling repetitive. The engaging qualities of the VR scene, despite not changing with each iteration, were still effective. This exploratory learning aligns with our objective of fostering critical thinking rather than rewarding rote memorization of an answer key. The same goes for how these skills are applied in the real world when faced with a real deposition that cannot be repeated multiple times.

6.2. Limitations

Within the allocated project time, we were only able to incorporate a storytelling simulation with VR. This utilized and built off of the code developed throughout the course homeworks. However, the quality of the training learning was not optimized given hardware and software limitations. One of the biggest challenges was the sensitivity of the accelerometer and gyroscope. This would make some participants uncomfortable and lost for the first iteration of the simulation. Having a separate hand controller would have been helpful to make the experience more immersive and give the users a sense of direction within the simulation. Additionally, we recognize that the scope and scale of the user testing was not as expansive as is expected or more thorough studies and works.

6.3. Future Works

Beyond technical improvements of head positioning and display clarity/color, the areas of improvement involve incorporating additional hardware and updated software. From the software perspective, we want to utilize a more updated version of Unity that allows us to incorporate newly developed assets that can mimic the presence of the opposing counsel and individual that is being deposed. This provides additional realistic pressure and gives the impression that you, as the user, as in the deposition itself. From the hardware perspective, we would want to include remotes, similar to the controls for the Meta Quest 3. While not holding up our intention behind accessibility, it allows for the tradeoff of making real time decisions within the simulation by selecting the desired option ball A or B. We would also record and embed audio into the experience in order to simulate realistic responses from the person being deposed. This creates learnings beyond text such as voice intonation and tone pitch changes, which experienced attorneys know to be aware of.

Beyond the content scope of depositions, this application has the potential to be scaled up in quantity (i.e. more cases for simulation training) and depth (i.e. more niche and specialized case content). The nature of future cases and what attorneys deal with is unpredictable, so including specialized cases with novel exhibits has the benefit of better preparing young attorneys. We would also want to expand the content of the simulations beyond depositions. Depositions allow for users to face a client, opposing counsel, or witness 1:1. However, there are many other areas of legal work within and beyond litigation that realistic simulations with VR can teach.

6.4. Conclusion

The ongoing challenge of educational legal tools is fostering an environment that invokes new critical thinking while feeling realistic. VR brings together the physical and virtual world to simulate new spaces for that kind of learning to happen. However, there are difficulties with bridging the virtual and physical world. With this project being a self-contained VR platform that delivers evidence-based deposition training on commodity head-mounted displays, the possibility of cheap, individually driven, and repeatable learning was evident. On the other hand, as mentioned in the limitations section, expanding beyond this level of a prototype could lead to virtual environments that feel staged and no longer realistic. Mundane tooling that leaves users bored because everything appears too polished is a concern and reason why VR users tail off after a certain amount of time usage. This prototype leaves room for improvements while providing the awe effect with immersive qualities like

the cube-map background catered to the lawsuit context. As mentioned in the future works, the incorporation of audio prompted question-response interactions pivots away from the intention of this project, which was set as a storytelling tool. This allows the user (i.e. law student, young attorney, someone who is going to be deposed in the future) to be in the driver seat of how experienced attorneys craft questioning while not taking up valuable billable hours from said experienced attorneys. This current project is limited to three short deposition scenarios and a smaller participant pool, but the feedback from the students and observed behavior during the simulations provided proof that this VR experience was an unique learning tool. Overall, this VR application of BBMC v. People of Cardinal City establishes a low cost, immersive proof of concept that showcases a repeatable education tool for legal strategy skills. This is the beginning of the possibilities for scaling VR within this field while hitting our four original contributions.

References

[1] Hotshot Legal Team. Hotshot Legal: Scenario-based training for junior lawyers, 2022. Online platform overview: `https://www.hotshotlegal.com`.

[2] J. Jongbloed, R. Chaker, and E. Lavoué. Immersive procedural training in virtual reality: A systematic literature review. *Computers & Education*, 221:105124, 2024.

[3] J. Lawson and D. Mitchell. Hybrid vr negotiation training for legal education. In *Proc. Australasian Legal Educ. Conf.*, pages 134–142, 2023.

[4] M. S. Sebastian, J. Perez, and L. Torres. Virtual reality and ai application for law education. In *Proc. Int. Conf. Legal Educ. Technol.*, pages 55–62, 2022.

[5] A. Smith and B. Lee. Immersive justice: Exploring the future of law practice through virtual reality. *J. Legal Educ. Technol.*, 18(3):201–215, 2021.

[6] E. van Dongen and Utrecht Law College Team. Innovation in law education: Pleading in virtual reality as a learning tool. *Legal Educ. Rev.*, 12:45–60, 2025.