Table of Contents

1. Introduction ........................................................................................................................................ 3

2. Ayyoub Ajmi, University of Missouri – Kansas City School of Law: Using 360-Degree Cameras for Self-Assessment in Skills-Based Courses ........................................................................ 3
   2.1 Self-Assessment for Skills-Based Courses ........................................................................ 3
   2.2 Video in Advocacy Classes ................................................................................................. 4
   2.3 Today’s Panoramic Imaging .............................................................................................. 5
   2.4 Immersive Video in Legal Education ............................................................................... 9
   2.5 Final Comments .............................................................................................................. 10

   3.1 Introduction .................................................................................................................... 11
   3.2 What OU Law is Currently Doing with Virtual Reality .................................................. 11
   3.3 Immersive Video ............................................................................................................ 12
   3.4 3D Models ..................................................................................................................... 13

4. Jennifer Wondracek, UNT Dallas College of Law: Bringing the Courtroom to You ............. 14
   4.1 The problem ................................................................................................................... 14
   4.2 The idea .......................................................................................................................... 15
   4.3 The evolution .................................................................................................................. 15
   4.4 Pilot 1 .............................................................................................................................. 16
      4.4.1 Pros ......................................................................................................................... 16
      4.4.2 Cons ......................................................................................................................... 16
   4.5 The wishlist ..................................................................................................................... 16
   4.6 Pilot 2 .............................................................................................................................. 17
   4.7 Conclusion ...................................................................................................................... 17

5. Conclusion ....................................................................................................................................... 17
1. Introduction

Virtual Reality (VR) is not a new concept. Hints started to arise in literature in the 1930s. By the early 1990s, virtual reality was in popular press news stories in the early ’90s, such as an ABC Primetime Live special in 1991.¹ The last 10-15 years has seen great advancement in virtual reality applications, becoming accessible to the masses through affordable virtual reality systems and even smart phones.

The Virtual Reality Society defines virtual reality as

a three-dimensional, computer generated environment which can be explored and interacted with by a person. That person becomes part of this virtual world or is immersed within this environment and whilst there, is able to manipulate objects or perform a series of actions.²

Examples of virtual reality vary from a first-person shooter video game to a flight simulator.

While there are many possible legal issues arising from VR,³ this article focuses on how VR can be used in the legal realm. Among a few possibilities for VR in the legal realm are communication, training, court exhibits, and evidence modeling. This article will look at three distinct projects in development by three of our panelists.

Please note, VR is already in use in law practice. It is often litigators who are using this technology, such as Jon Mitchell “Mitch” Jackson, and sometimes it is difficult for them to share their knowledge due to their heavy litigation schedule. We were hoping that Mitch will be able to join us to share his experiences in Chicago in March, but he cannot make it due to an ongoing trial.

2. Ayyoub Ajmi, University of Missouri – Kansas City School of Law: Using 360-Degree Cameras for Self-Assessment in Skills-Based Courses

There are different ways to create virtual worlds. You can start with a blank slate and add in items from the real world that have been digitized. Or, you can create every detail from scratch as a brand new digital item. A third method is to use 3D images of the real world to create a new virtual world. You regularly see this method used today to create “3-D Tours” of real estate or vacation destinations. Panelist Ayyoub Ajmi is using this last method in legal coursework.

2.1 Self-Assessment for Skills-Based Courses

Prior to each competition or Mock Trial, students spend extensive time researching and preparing for the cases they are presented with. In addition to their understanding of the legalities surrounding the cases, which most the students learn as they practice, they are also required to demonstrate a high level of communication and persuasion skills. Students are expected to complete several practice sessions with their instructors as well as additional sessions outside of the structured class time.

Videotaping practice sessions for critique purposes and self evaluation in skills-based courses such as trial advocacy, counseling and negotiation has long proven its utility. Self-assessment, using videotaping or any other form, provides students with an opportunity to reflect on their performances to help them recognize their strengths and weaknesses and to take more responsibility and ownership over their learning outcomes. Self-assessment using video is especially effective in that it allows students to see things that cannot be conveyed by the written word, such as behavior and non-verbal communication that students have developed but are unaware of. The realistic presentation of video and its immediacy is an excellent preparation for law students as they are expected to be familiar with video and other audiovisual media which are highly used in deposition and trials. The other benefit of using video as a self-assessment tool is the dramatic increase in learning and retention of material when it is seen, 85 percent, compared to ten percent when it is heard and only five percent using other senses.

Educators have relied on video and other multimedia forms to supplement their teaching for decades. Kimberlee Kovach used videotaping for self-reflection and evaluation of her students to provide a realistic learning experience, which she described as “Virtual Reality.” Her goal was to provide students with a constructive one-on-one feedback based on positive reinforcement as students are more willing to listen if they see an opportunity to improve. The National Institute of Trial Advocacy (NITA) has used video to assist with providing one-on-one feedback in its training sessions for attorneys for many years, too.

2.2 Video in Advocacy Classes

At the UMKC School of Law, professors rely on videotaping to prepare students for competitions by improving their communication and public speaking skills. For Trial Advocacy courses, videotaping serves as a non-graded self-assessment tool. Students are encouraged to

---

7 Johnson, supra note 4.
8 Kovach, supra note 6.
9 Kovach, supra note 6.
review their presentations to identify unconscious activities and mannerisms that might affect their communication skills.

When preparing for competitions, entire mock trials are recorded and reviewed to improve competitors’ persuasive and advocacy skills. While the video camera is often focusing on the speaker only, their teammates quickly learn that they also need to remain focused on their role, as it may negatively impact the entire team performance. In addition, being able to observe the audience reaction during a Voir Dire,\(^{10}\) for example, and quickly adjust the delivery if needed, is very important.

So far, the Advocacy team at the UMKC School of Law relies on a single camera placed on a tripod to record mock trials and other learning activities inside the courtroom. A camera operator is always needed to follow the student advocate or to switch the scene between the student and the audience when needed. Usually, students take turns recording each other, and the course assistant is in charge of collecting, storing, and sharing the video footage.

While the courtroom, where all advocacy courses take place, is equipped with a multi-camera recording system, students and instructors alike find it difficult to operate, and it does not provide an immediate way to play back the recorded sessions as they need to be processed first. Students also often rely on their own mobile devices or personal video recording devices to capture their practice sessions outside of the classroom. In the past, the law school also experimented with Google Glass to record a role playing exercise. The experience was successful as it provided the students with the possibility to capture a first-person-perspective reaction of their clients during an end-of-life decision making assignment without being distracted by a full-size camera. However, due to other limitations of the wearable device, such as its low battery life, heat generated during long recording sessions, and its discontinuity by Google, the school resumed the search for a better alternative that can allow us to record multiple scenes at once while also being easy to operate.

\[2.3\] Today’s Panoramic Imaging

Panoramic imaging is not new. However, the proliferation of digital photography, which can capture and process high-resolution images, with low-cost consumer cameras brought the technology to the masses very quickly. Today, most smart phones are capable of capturing panoramic images out of the box. This advancement is also driven by commercial applications for which panoramic imaging is worth the investment such as entertainment, interactive TV, real estate, and virtual tourism.\(^{11}\)

Today’s 360-degree cameras are capable of capturing the entire environment surrounding them using multiple cameras facing different directions or using an omnidirectional camera.


Recorded video can then be played on regular screens with the added capability of moving the scene around with dedicated Virtual Reality goggles to enter an immersive experience.

With the goal of providing Advocacy students with an ideal solution to record their practice sessions from perspectives of both the student advocate and the audience and easily review the videos for self-assessment and critiques purposes, a 360-degree camera seems to be a good device to investigate. Recently, different 360-degree cameras became available to consumers. They differ in term of image resolution, number of lenses, size, compatibility, complexity, and price. Table 1 represents characteristics and price comparisons of several 360-degree cameras available in the market as of October 2017.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Price</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>GoPro Fusion</td>
<td>$699</td>
<td>5.2K, 18MP, 100 minutes battery life, dual lenses</td>
</tr>
<tr>
<td>Ricoh Theta V</td>
<td>$396</td>
<td>4K, 14MP, 80 minutes battery life, dual lenses</td>
</tr>
<tr>
<td>Detu Twin</td>
<td>$149</td>
<td>HD-Ready, 8Mp, 15 minutes battery life</td>
</tr>
<tr>
<td>Samsung Gear 360</td>
<td>$145</td>
<td>4K, 8.4MP, 130 minutes battery life</td>
</tr>
<tr>
<td>Kodak PixPro SP360 4K</td>
<td>$350</td>
<td>4K, 12MP, 55 minutes battery life, single lens</td>
</tr>
<tr>
<td>Insta360 One</td>
<td>$299</td>
<td>4K, 24MP, 70 minutes battery life, dual lenses</td>
</tr>
<tr>
<td>Garmin VIRB 360</td>
<td>$799</td>
<td>5.7K, 15MP, 4 microphones, 65 minutes battery life, dual lenses</td>
</tr>
<tr>
<td>360fly 4K</td>
<td>$499</td>
<td>4K, 12MP, 90 minutes, single lens</td>
</tr>
<tr>
<td>LG 360 Cam (LGR 105)</td>
<td>$89</td>
<td>4K, 16MP, 120 minutes battery life, dual lenses</td>
</tr>
<tr>
<td>Insta360 Air</td>
<td>$119</td>
<td>4K, 3MP, phone-tethered, Android only</td>
</tr>
</tbody>
</table>

Table 1. The 10 best 360-degree cameras in 2017.12

After reviewing several alternatives, the school settled on Kodak PixPro SP360 Action Camera due to its design, features, and price. The PixPro SP 360 provides a 360-degree view angle, 16 Mega Pixels CMOS for still photographs, 1080p HD video, Wi-Fi connectivity, and remote

---

control capabilities from mobile devices or computers. Its cubic design enables it to stand securely on flat surfaces without the need of a tripod (Figure 1) The raw video recorded in most 360-degree cameras is spherical (Figure 2). It needs to be processed before it can be used and shared. The Kodak PixPro SP360 software, available for Windows and Mac, can be used to convert spherical videos to different modes such as panorama, quad, ring, dome, or as segmented mode, as illustrated in this experiment (Figure 3). The software also provides some basic editing and video enhancement tools to trim the video, adjust orientation of the image, or brightness and colors. 360-degree videos also require specific viewers for playback. Recorded video can be played directly on the Kodak PixPro SP360 software. However, in order to share the video online, metadata representing various characteristics of a spherical video is needed. Metadata can be embedded in the video using tools such as Google’s 360 Video Metadata App or the built-in feature that comes with the software.

Figure 1: Kodak PixPro SP360. This figure illustrates a Kodak PixPro SP360 camera standing directly on any flat surface.
Figure 2: Spherical video. This figure illustrates a raw frame as capture with a 360-degree camera.
2.4 Immersive Video in Legal Education

Equipped with the new Kodak PixPro SP360, the school started a short experiment recording the Voir Dire portions of the final exam for a Trial Advocacy II spring 2016 class. Voir Dire is the preliminary examination of prospective jurors by a judge and attorneys in court. It is used to determine if any juror is biased and/or cannot deal with the issues fairly, or if there is cause not to allow a juror to serve.¹³ The goal was to use Kodak PixPro SP360 camera to record both the student advocates and the jurors at the same time. Sessions recorded were between 7 and 30 minutes each. A single full-charge of the Kodak PixPro SP360 can record approximately 160 minutes of high definition video at 1080p/30fps. But the camera will only support Micro SDHC cards with up to 32GB of storage space. The Kodak PixPro SP360 software is necessary to trim and cut the videos, adjust the contrast, and generate a segmented MP4 file for each student. The segmented format provides a 360-degree view of the room without the need of a special viewer or device (figure 4). 360-degree-ready video files that can also generated using Kodak’s software to share the videos on YouTube, Facebook, or other online platforms.

¹³ Hill and Hill, supra note 10.
The goal of this experiment was not to study the effectiveness of 360-degree camera over regular ones. It was more to have a real experience with the device in the classroom. A new technology needs to add value to the learning process and not become a distraction or an obstacle to it. Both the students and their instructors were satisfied with its ease of use and the quality of the video shared with them. The students were more impressed when they watched their Voir Dire sessions using a Google Cardboard (Virtual Reality) headset.

2.5 Final Comments

The 360-degree video will certainly have its place in skill-based education. But as with any new technology, there is still room for improvement. For the Kodak PixPro SP360, it is the fact that it has a single lens which means that the area below it will not be recorded. Kodak has a dual camera mount, to obtain a full spherical view by combining two identical cameras, along with a program to stitch the two videos together. But if there is a real need of recording a spherical video, maybe choosing a different camera equipped with dual or multiple lenses is a better alternative. Another challenge faced during this experiment is the time needed to render each video. Due to the large amount of data needed to create a spherical video, often dealing with large files (approximately 4GB for each 30 minutes of video). The large size of video is negatively impacting the encoding process. In fact, the ratio is 1 to 1. It takes one hour to process one hour of video footage. But, if the goal is to play back the video immediately after it is recorded, it can be done directly from the software and in this case there is no need to wait for the video to be processed.
After this short experiment during spring 2016, the school purchased two additional 360-degree cameras for the Trial Advocacy class. Students and instructors had the option to choose the panoramic camera instead of the regular one to record their practices. However, the simplicity of a regular camera, although it provides limited features, seemed more appealing to the instructors. Going through the rendering difficulty after each recording and the need for a specialized player or device to review the videos is certainly an obstacle for an already overstretched curriculum.

3. Kenton Brice, University of Oklahoma College of Law: Virtual Reality in the Courtroom
   3.1 Introduction

Theorizing about the use of virtual reality in the legal industry is nothing new. However, the widespread availability and low cost of current virtual reality systems is quickly moving the use of virtual reality in the legal world from the theoretical to the practical. In 2016, three desktop virtual reality systems were introduced on a consumer level that made virtual reality readily accessible to most. In addition, 360 cameras, 3D scanners, and drones are also becoming mainstream, making content creation much easier for the general public. From the massive to the miniscule, legal professionals now have the capability to present a variety of types of evidence or participate in the litigation process through the use of virtual or augmented reality technologies without having to invest tens or hundreds of thousands of dollars. As the technology continues to improve, attorneys must stay abreast of these innovations and explore how it can be used in practice. At the very least, attorneys should have a basic understanding of the two main types of content as they become widespread and will eventually end up in a discovery request.

3.2 What OU Law is Currently Doing with Virtual Reality

The University of Oklahoma College of Law implemented its own virtual reality systems in 2016 as part of its Digital Initiative. Among the various types of virtual reality content, there are two main types that OU Law has been exploring for use in its curriculum and in practice:

16 For example, “LIDAR, which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses—combined with other data recorded by the airborne system— generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.” http://oceanservice.noaa.gov/facts/lidar.html.
immersive, 360° video and three-dimensional (3D) content. By using these two different types of media, OU Law has been able to enhance its curriculum and explore the challenges and opportunities facing the legal industry with this technology.

### 3.3 Immersive Video

The easiest introduction for the legal industry to virtual reality is immersive video.\(^{18}\) While not truly “virtual reality”, immersive video, also known as 360° video, takes advantage of the virtual reality system hardware to provide a truly immersive video experience. 360° video places the viewer into the middle of a video scene, where the video and audio are 360 degrees horizontally and vertically around the viewer. These immersive videos have a wide range of application in the legal field, from experiential teaching in a courtroom to recorded depositions to the next generation of police body cameras.\(^{19}\) Capturing 360° video is also much more simple and cost efficient than creating 3D models in virtual reality (although, as detailed below, it is becoming simpler and more cost efficient as well). For 360° video, most consumer cameras cost under $1,000, with most under $500, and feature one button capture or a paired mobile application to control lighting settings and capture.\(^{20}\)

OU Law is currently using various immersive videos in its legal curriculum, including professionally produced videos and custom created content. With professionally produced videos, our faculty are delivering high quality, documentary style content for our students. The most popular video so far has been *Clouds Over Sidra*,\(^ {21}\) an immersive video experience of a Syrian refugee camp in Jordan, narrated by a twelve-year-old Syrian girl. Professor Evelyn Aswad has been using this video in her International Human Rights courses in hopes of increasing students’ levels of empathy for displaced persons. Since our students cannot travel to Jordan on a regular basis, and OU Law cannot send a camera crew to massive refugee camps, having this type of professionally produced content is an easy way to transport our students to experience Jordan in a more tangible way than a regular video or a textbook can.

In addition to curating professionally produced content, OU Law is creating its own immersive video content in multiple contexts. As early as December 2016, after only two months of having the virtual reality systems and 360° cameras, Associate Dean and Professor of Law Brian McCall started exploring how this technology could enhance his Transactional Law Practicum class. Dean McCall took a Nikon KeyMission 360 camera to video student presentations of a mock merger at various law firms in Oklahoma City. By placing the camera in the center of the conference room table, Dean McCall was able to capture the students’ presentations and the attorneys’ reactions all at the same time, enabling future students to critique the presentation.

---

18 Immersive pictures are also available, known as 360 photos.
19 See BodyWorn’s Smart Scene 360 camera system (http://www.bodyworn.com/smartscene-360/).
21 “Clouds over Sidra”, With.in (2016) (https://with.in/watch/clouds-over-sidra/).
from all perspectives. These early videos showcased the possibilities of using immersive video in a non-litigation setting using 360° cameras to capture an entire boardroom.

Since that early video, OU Law has expanded its 360° video content, from recording moot court competition practices and, hearings to oil and gas operations, which all highlight the varied and extensive possibilities that this technology brings to attorneys and legal departments. OU Law’s most recent project was using a Garmin Virb 360° camera tethered to a DJI Phantom 4 Pro drone to capture historic and current oil and gas operations in and around Midland, Texas. Using this footage, students have been able to explore oil and gas wells, tank batteries, and water reclamation sites without having to leave the law school.

While these first tests have been a major success, there are plenty of challenges that practitioners face when using 360° imaging. First, resolution when viewing 360° video is limited. The current consumer-grade 360° cameras range in resolutions from 1080 high-definition to 5.7K. At first glance, these specifications would seem to produce a truly high-quality image. Because the pixels are spread over an entire half-sphere, however, the resolution turns out to be less than what someone would expect from a “high-definition” experience. Additionally, the current mainstream consumer-grade headsets do not display in a true “high-definition” format. Because of a host of issues with the current technology, pictures and videos are still somewhat pixelated and not as sharp as modern video screens.

### 3.4 3D Models

To receive the full value out of a virtual reality system, 3D content is a must. This is the bedrock of virtual reality – transporting a user from their current world to any other world that can be imagined through the use of 3D models. 3D models are digital models of objects or places that are displayed in virtual space through the use of a computer, software, and a headset. The scope and scale of the types of models available are endless, and people all across the world are creating 3D models of anything and everything. For instance, a 3D model can consist of the entire earth, with scalability options from viewing the entire earth down to the street level of a city. Additionally, 3D models can go as small as the imagination can take it, even to the molecular level, providing pharmaceutical patent claims a new arena of displaying the difference between the molecular makeup of a new and old drug. The easiest 3D models to create are static models, which can be done with cameras, scanners, or LiDAR systems. However, 3D models can also be animated or interactive depending on the nature of the file type that makes up the model and the level of coding ability used to create the model.

---


23 There are online communities and marketplaces where creators are posting their 3D models. See SketchFab (https://sketchfab.com/); see also Turbo Squid (https://www.turbosquid.com/).

24 Available in Google Earth VR (https://vr.google.com/earth/).
Currently, OU Law has been experimenting with 3D models created from various sources. Being part of a larger research university, OU Law gets to take advantage of the models that the colleges of engineering, architecture, anthropology, chemistry, and biology are creating in exploring what virtual models can do for lawyers. One model in particular, a highly detailed model of a skull made from a scanner, highlights how personal injury attorneys can view injuries in a new, dynamic light. In addition to these models, OU Law is also creating its own models. As with the 360° footage that was captured using the drone, multiple photographs (120 to be exact) from the drone were taken of the Santa Rita #1 Oil Well in Texon, Texas. These photos were then “stitched” together in software to create a 3D “photographic” model of that oil well. This first attempt created a good model that highlighted details of the well that future students could explore on their own, without having to travel away from the law school.

Applications are not limited to curricular integrations. Because of the variety of models that could be created, attorneys can “walk through” crime and accident scenes, construction sites, or even historic areas. This has already happened to some extent, as seen with German prosecutors using the technology to recreate a 3D model of the Auschwitz concentration camp in Nuremberg trials. As the technology progresses, more and more courts, attorneys, and legal departments will be exploring this technology to enhance the litigation experience.

There are challenges to incorporating 3D models into litigation. As with digital photos, or even Microsoft PowerPoint presentations, there will be hesitancy as to the accuracy of 3D models to depict the actual scene or object it purports to be. Additionally, attorneys and practitioners that receive a 3D model file during discovery may have a host of questions, beginning first on how to even view the file if they do not have hardware or software needed. Thankfully, the consumer market is already moving quickly to adopt standards. The Microsoft Windows 10 Fall Creators update last year now includes its Mixed Reality Viewer, which can view most standard 3D model files with no extra software or hardware needed. As this technology progresses, more and more attorneys will have the tools and know-how to incorporate virtual reality into their practices.

4. Jennifer Wondracek, UNT Dallas College of Law: Bringing the Courtroom to You

4.1 The problem

UNT Dallas College of Law currently has one courtroom. This leads to conflicts at times when multiple groups want to use the courtroom at the same time. While there are plenty

---

25 The Santa Rita #1 is the historic “discovery well” for the Permian Basin in Texas. See more about the Santa Rita #1 at the Texas State Historical Association, [https://tshaonline.org/handbook/online/articles/dos01](https://tshaonline.org/handbook/online/articles/dos01). To see a video of the drone footage that was used, see [Santa Rita #1 – Raw Drone Footage – Video 1](https://www.youtube.com/watch?v=NJGMFFpR-rE).

26 Autodesk’s ReCap ([https://www.autodesk.com/products/recap/overview](https://www.autodesk.com/products/recap/overview)).

classrooms and study rooms for practice, no one can deny that being in a courtroom creates a different mentality when practicing oral arguments, cross examinations, and the like.

4.2 The idea

Professor Jennifer Wondracek recognized this issue and came up with, what seemed at the time, a farfetched idea. Why not create a courtroom environment that anyone could use at anytime from anywhere? And thus, the idea of a virtual courtroom app was born.

4.3 The evolution

The idea of the virtual courtroom evolved quickly. In researching different apps, Prof. Wondracek soon found that courtrooms were scarce in virtual reality or even gaming, in general. What did currently exist were several public speaking apps that allowed one to practice speeches in a variety of different scenarios, such as a theater, a classroom, or an interview panel. These apps provided the speaker with realistic distractions, such as people talking, coughing, and cellular phones going off. Interested in learning more, Professor Wondracek started to reach out to some of the creators of these apps.

One vendor, E-learning Studios, has participated in extensive conversations with Prof. Wondracek. The very first conversation started out with the E-Learning Studios representative saying “About the only industry that I don’t see virtual reality applying to is law.” After discussing the problems with courtroom accessibility and student feedback needs, the vendor’s views changed dramatically.

The E-Learning Studios Public Speaking VR Simulation provides a person with several scenarios in which to present with or without a slide presentation. It also has the various distractions that one might find in those scenarios: noise, lighting, etc. One of the biggest boons is that the app also provides users with feedback on issues such as tone of voice, voice speed, and connection with the audience. Finally, the app allows users to record their sessions. The feedback and recording soon became fundamental to the virtual courtroom concept.

Students struggle to receive feedback on their presentations. When you were in college or law school, how often did you struggle through a practice speech or oral argument while trying to watch yourself in the mirror? If you were lucky, your trial advocacy class would record your in-class presentations and allow you to do self-assessments. Feedback from teachers or other students before officially presenting your speech was often minimal. What if you could practice an oral argument in the real (or close to) setting and receive feedback on your presentation skills? “You are talking too fast. You need to express more (or less) emotion. Try looking at your

28 [https://www.e-learningstudios.com/](https://www.e-learningstudios.com/)
29 Professor Wondracek later learned that the vendor actually contacted a British law professor after the initial conversations to discuss possible collaboration.
audience more often.” You can have the best argument in the world, but if you cannot engage your audience, you and your client will not fare as well as they should.

4.4 Pilot 1

Professor Wondracek and two student workers piloted the public speaking app in its current iteration in Summer 2017. They found the following:

4.4.1 Pros

- Users received instant feedback on their performance.
- The test was limited to an auditorium setting.
- The app worked on iOS and Android devices.
- Users could use VR headsets from Google Cardboard to Samsung Gear VR.

4.4.2 Cons

- Adding a PowerPoint presentation or script was not as user-friendly as hoped.
- Recording was turned off in the test app.
- A remote for the VR headset was more useful with the app.
- Per the vendor, the best performance occurs on the Samsung Galaxy phones with a Samsung Gear VR headset, which was not available for the pilot.

4.5 The wishlist

After the initial pilot, Professor Wondracek was convinced that such an app would assist not only law students but also attorneys who do not have a courtroom available for practice, high school and college students who are participating in mock trials, and anyone who wanted to experience being in a courtroom. The preferred features wishlist for the virtual courtroom app includes:

- Recording ability on all platforms
- Federal courtroom environment
- State courtroom environment
- Post-Presentation feedback (ratings on how you did and ideas for how to improve)
- Simultaneous presentation feedback (e.g., juror starts snoring, judge complains if you stop speaking for too long, etc.)
- Works on all smartphone platforms
- Affordable to all (approx. $5/app and usable with a Cardboard headset)

The next hurdle was justifying the expense (approximately $32,000) to work with E-Learning Studios or finding an alternative way to create the app.

31 https://vr.google.com/cardboard/
4.6 Pilot 2

In July 2017, Prof. Wondracek participated in the first American Association of Law Libraries Innovation Tournament. Three projects were presented, and two prizes of $2,500 were available. Prof. Wondracek’s project was selected as one of the projects.

The money will fund several Samsung Galaxy phones and Samsung Gear VR headsets. The pilot will include two advocacy competition teams. The test group will use the app as part of their training. The control group will use traditional training methods. For both groups, all student competitors and team coaches will receive surveys tracking their performance. While not a perfect method to determine effectiveness, the beliefs of the students and the experienced coaches as to how the app does or does not affect performance will be a pivotal point of the study. The completed data will be used to apply for further funding to create the virtual courtroom app.

The pilot is taking place during the Spring semester of 2018. As UNT Dallas received federal funding, all projects involving human test subjects where the data may be used outside of the university must be approved by the UNT Institutional Review Board in order to ensure humane and proper treatment of the subjects. This includes projects that consist solely of surveying the subjects.

4.7 Conclusion

UNT Dallas is still very much in the beginning stages of using virtual reality for training. 360° cameras, a 3D printer, a 3D scanner, and many forms of training are being experimented with at the College of Law. The future of the app and similar projects are ripe with opportunity.

5. Conclusion

The law schools and practitioners are all bringing different ideas for how virtual reality can be used in legal education and law practice. It will be interesting to watch the evolution of these projects.