

## Reinventing New Student Orientation with an Augmented Reality Scavenger Hunt

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**Abstract:** Augmented reality (AR) overlays digital content onto reality in real time through the use of camera-enabled devices such as a mobile phone, tablet, or headset. In educational settings, AR provides us with the ability to enrich real-world materials with digital content such as videos and instructional tutorials at point-of-need. In the fall of 2016, Berkeley College librarians, in cooperation with other departments, reinvented New Students Orientation (NSO) with AR technology. In addition, they decided to integrate LibAnswers SMS functionality into the AR activity. By fully assimilating this additional technology into the activity's core, they put the library in a place where all conversations regarding the NSO going forward would have to involve the library. In this gamified activity, students play detective attempting to solve "The Mystery of the Stolen Laptop." Berkeley College librarians have drawn a lot of positive attention to the library by introducing a new cutting-edge technology to the college in a practical way, while engaging students in an important learning activity.

**Keywords:** augmented reality, gamification, orientation, technology, student engagement

Librarians at the Berkeley College Paramus Campus reinvented New Student Orientation (NSO) using augmented reality technology in combination with Springshare's LibAnswers virtual reference platform. In this gamified activity, students play the role of detective, attempting to solve "The Mystery of the Stolen Laptop." Ultimately, this initiative has drawn much positive attention to the library by introducing a new cutting-edge technology to the College in a practical way, while engaging students in an important learning activity.

In the fall of 2016, freshly invigorated from a workshop attended at the United States Distance Learning Association Conference, Berkeley College librarians returned, motivated to leverage augmented reality technology in a practical way. In initial planning stages, the goal was to develop a library-specific orientation, but as the idea came to life, an opportunity to bring the

library to the forefront of NSO for the college was quickly realized. Thus, the Augmented Reality Mobile Scavenger Hunt was born.

### **Integration of Two Technologies**

The backbone of this project involves two technologies: augmented reality (AR) and Springshare's LibAnswers platform.

#### **Augmented reality (AR).**

AR overlays digital content onto reality in real time through the use of camera-enabled devices such as a mobile phone, tablet, or headset. AR is an enhanced version of reality made possible by technology. One can already see the widespread use of AR in the world. Many popular apps such as Pokémon Go, Snapchat, and Facebook are leveraging this technology for entertainment purposes. In the Pokémon Go example, players use their mobile device camera to see and catch little creatures which are shown in their real world environments through AR.

In educational settings, AR provides librarians with the ability to enrich real-world materials with digital content such as videos and instructional tutorials at point of need. Applications such as HP Reveal allow librarians to easily develop augmented reality experiences, adding engagement and interactivity into instruction and programming.

HP Reveal, a free application for iOS and Android, allows one to create their own AR experiences. It enables one to take a picture of a real-world image, then overlay a video or animation on top of that picture. When the picture is scanned with the HP Reveal app on a mobile device, the "hidden" digital content is displayed. HP Reveal also has a free Windows application, HP Reveal Studio, offering enhanced functionality in creating AR experiences. There are other free apps available with similar functionality.

### **LibAnswers & SMS integration**

LibAnswers is a Springshare product that the Berkeley College Library uses to facilitate virtual reference services. Along with a live chat service and knowledge base of frequently asked questions, the library also leverages the LibAnswers text-a-librarian service. Students can text their questions to a defined SMS number, then librarians respond to those questions through LibAnswers, with responses going back to students as a text message.

Additionally, LibAnswers' administrative functionality allows one to define SMS keywords (trigger words), which are programmed to respond with automatic customized verbiage. For example, after the keyword "hours" is defined in LibAnswers, anybody who sends an SMS message with the word "hours" gets an auto-response with the library's hours.

LibAnswers SMS functionality was integrated into the AR activity intentionally. By fully assimilating this additional technology into the activity's core, the library is now in a place where all conversations regarding the NSO going forward would have to involve the library.

## **Project Goals & Objectives**

In pitching this project to upper administration, it was important to have defined objectives. While it was the goal of the library to make the new NSO more interactive by applying technology, it was also important that the library be positioned at the center of the action. Additionally, librarians wanted to use the principles of gamification to engage students as they learned. Objectives included:

1. Building awareness of augmented reality and its potential for student engagement and learning. Pilot using the HP Reveal application with onsite students.
2. Drawing attention to the Berkeley College Library's new text-a-librarian service. Pilot the use of trigger words as auto-responders.
3. Applying the principles of gamification to New Student Orientation, making the experience more interactive and entertaining.
4. Providing each student-facing department on campus the opportunity to market their most important services while students are engaged in this activity.

## **Collaboration**

As librarians began building out this activity, the importance of getting all departments on board to ensure success was understood. With the support of our upper administration, the project was introduced at a meeting involving the directors of all student-facing departments at the Berkeley College Paramus Campus. In early planning stages, librarians worked closely with the Marketing Department and Office of Student Development and Campus Life (SDCL) to create supporting materials and technology infrastructure and to determine logistics. Throughout the course of the project, librarians worked collaboratively with each department on campus to identify key material to integrate into the activity, then to record a video introducing students to that department.

Additionally, SDCL agreed that all incoming students would be required to complete this activity in order to obtain their student ID Card. Students were given the option of completing the activity in small groups on the day of NSO, or asynchronously at their own convenience prior to the start of the semester.

## **Storyline and Activity Flow**

The storyline of the Augmented Reality Mobile Scavenger Hunt places students in the shoes of a detective, trying to solve "The Mystery of the Stolen Laptop." First, students watch a video introducing them to the project.

Students quickly learn that an anonymous witness is aware of the location of the stolen laptop and will correspond with them solely through text messaging. They are told that they have to follow the anonymous texter's directions carefully in order to find it. The witness has left a series of videos hidden around campus, and students must use augmented reality to investigate. Each

time a video is found, a new “trigger word” is provided. Students are required to text the trigger word to the witness to obtain the next clue.

The first thing students must do is to put their devices into “investigation mode,” which requires downloading the HP Reveal application to their mobile device and programming the anonymous witness’s number into their phones. The majority of students are at ease with this as they are engrossed in the storyline and empowered to experiment with a new technology. For those students who do not have a mobile device, the library provided iPads with the HP Reveal app preloaded and a free text-messaging application. Students who choose to use their own device must follow the Berkeley College channel.

The anonymous witness starts by texting the student a clue. Student use that clue to navigate to a hidden image, or “aura.” The word aura is used to represent an image with digital content augmented behind it, accessible by scanning the image with the HP Reveal application on a mobile device. In this case the auras are pictures and signs already visible around campus, overlaid with videos of departmental directors talking about the resources and services offered. Each aura is clearly identified with the HP Reveal logo.

Students then progress through the activity by traveling from department to department. At each location they find the hidden image, scan it to watch the video, obtain the trigger word, then text the trigger word to the SMS number to receive the next clue.

## **Activity Conclusion**

The last clue leads to the library. The story premise ends in the library where the librarian identifies herself as the anonymous texter in the concluding video. The librarian tells students the laptop was never stolen at all, and the investigation was just a ploy to get the students to learn about all the great support services available to them at Berkeley College.

The librarian then explains that the library loans out laptops, and they can be checked out with a library card. Students have the opportunity to register for a library card at this point. The librarian also explains that the number they have been texting is the library SMS number and that they can use it to get library support throughout their time with Berkeley College. Students are asked to program the number into their phones for future use.

It is important to note that the activity described could easily be scaled back to meet the needs of a library-specific orientation. The library chose to integrate LibAnswers to make the activity more comprehensive and to ensure the library remained at the forefront. The SMS functionality could easily be removed, and clues could be provided within the video content, making for an engaging activity using only AR technology.

After multiple semesters of implementation, many Berkeley College students have AR technology readily available to them on their mobile devices. Students are also following the Berkeley College channel, so any other auras created by librarians can be accessed with no additional setup.

## **Other Considerations**

Before implementing the AR scavenger hunt, librarians discussed various concerns, such as motivation for participation. It was found that holding student IDs until they finished the activity to be most effective. Librarians also considered that technical barriers might prevent students from downloading an app on their smartphones on the spot. As a solution, information about downloading the HP Reveal app was included in the SDCL invitation letter to new students, so they could download the app before coming to campus. Librarians also downloaded the app on several tablets that could be borrowed from the library.

Additionally, librarians discussed whether students should be challenged to complete this activity individually or as a group. Student feedback demonstrated that putting students in pairs would be ideal when possible. One student would scan the auras using the HP Reveal application on their tablet to reveal the videos. The other student would text the trigger word to the anonymous witness as needed to obtain the next clue. This allows the activity to flow at a faster pace, although it can still be completed asynchronously by a single student in less than an hour.

## **Student Feedback**

The library continues to receive extremely positive feedback about this activity, collected through an electronic evaluation form that students are required to complete as a final step before obtaining their student ID. Other feedback is obtained through direct observation of and discussion with the participants. Students really enjoy this activity. Most notably, they value being empowered to experiment with a new technology, appreciate the gamified experience, relish using their mobile devices in the learning process, and learn a lot about the campus and various student services. They emphasize their delight in trying to figure out where the clues are located, physically navigating around the campus, and being able to experience the activity with their new classmates. Some constructive feedback in the first iteration included increasing the volume in some of the videos and providing students with a physical map of the campus.

## **Impact**

In initial planning stages, the focus was on AR in a library-specific orientation. As the idea evolved, the library quickly saw the positive attention that could be drawn to it by expanding the activity to meet a larger need of the college. The library has not only taken the lead on introducing AR to the college in a practical way, but also strategically positioned the library at the forefront of this important initiative, ensuring the library's involvement as an integral part of the New Student Orientation.

Furthermore, through this activity the library is able to ensure that every new student has the library's SMS number programmed into their phone as a path to vital library support throughout their program of study.

Additionally, all students come away from this activity with an understanding of augmented reality and how it works. They have the HP Reveal application installed on their phone or tablet and follow the Berkeley College channel. The library will continue to develop displays and activities that take advantage of this innovative approach, and students will already have the technology in place to participate. This will greatly improve the library's ability to

engage students through technology as well as add interactivity to instruction and programming.

The NSO was also a great test of the LibAnswers SMS auto-response functionality, which the library will begin to use in marketing efforts going forward. All incoming students have the library's SMS number programmed into their phones. No amount of marketing could ever achieve this for the library.

Through the AR scavenger hunt, much positive attention has been given to the library for pioneering the use of a new cutting-edge technology in a practical way, while benefiting the college as a whole. The library's work on this project is aligned with larger institutional objectives in regard to fostering a culture of innovation. It cannot be disputed that key personnel throughout the organization are now looking at the library and librarians through new eyes based on the success of this innovative project.

## **Moving Forward**

Once a student has downloaded the HP Reveal application and followed the Berkeley College channel, they have the ability to interact with any AR content created by the library going forward. The library plans to take advantage of this, as there are number of other ways it can utilize this kind of technology.

Librarians also plan to capitalize on the fact that all incoming students will have this technology readily available to them. The library can use HP Reveal to provide supplementary information throughout the building at point of need. Other ways librarians will be leveraging this technology include:

- Brochures and handouts augmented with instructional multimedia tutorials
- Wall displays of student work augmented with student interviews
- Flyers augmented with descriptive marketing videos
- Book covers augmented with student reviews
- Interactive library displays or games
- "Meet the Librarians" photo wall
- Instructional videos for use of printer/copier/devices
- Homework assignments with images programmed to provide in-depth instructions
- Student projects augmented with videos of students introducing themselves and talking about their experiences

## **Final Thoughts**

All incoming students at the Berkeley College Paramus Campus complete the New Student Orientation. At the end of this activity, students are empowered to use a new technology that they could see in their future workplaces and also have the library's SMS

number programmed into their phones. Students learn about all of the great resources and services offered by various departments across the college while engaged in this highly interactive and gamified scavenger hunt. By positioning the library as an integral part of the storyline, all new students are being introduced the library in a manner that will serve them well throughout their time at Berkeley College.

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We've prepared this list of scavenger hunt missions for administrators, student leaders, or orientation coordinators who are looking to utilize GooseChase to build a virtual orientation experience. Tips For Organizing a Virtual Orientation Game. The key to an awesome virtual orientation experience is fostering connection amongst the new students, and getting them excited about your school's culture! Rather than using a scavenger hunt to explore hard-to-find locations on campus, a virtual orientation scavenger hunt run remotely can be used to showcase creativity, humor, and self-expression This project shows a creative approach to the familiar scavenger hunt game. It involved the implementation of an iPhone application, HUNT, with Augmented Reality (AR) capability for the users to play the game as well as an administrative website that game organizers can use to create and make available games for users to play. Using the HUNT mobile app, users will first make a selection from a list of games, and they will then be shown a list of objects that they must seek. Once the user finds a correct object and scans it with the built-in camera on the smartphone, the application will attempt Augmented Reality is one of the most rapidly spreading technology used in several areas such as healthcare, education, entertainment, industry. For tourism and travel, visual augmented reality has... ProteinScanAR-an augmented reality web application for high school education in biomolecular life sciences. In: 2012 16th International Conference on Information Visualisation, pp. 578-583 (2012)Google Scholar. 9. Shelton, B.E., Hedley, N.R.: Using augmented reality for teaching earth-sun relationships to undergraduate geography students. Mobile augmented reality as an orientation aid : a scavenger hunt prototype. In: 2015 International Conference on Intelligent Environments, pp. 1-4 (2015)Google Scholar. 12.