Using Virtual Reality for Community Outreach and Student Recruitment

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Abstract

An antique phone booth was converted into an interactive Virtual Reality (VR) booth to use for potential student recruitment, current student demonstrations, and community outreach. Satisfaction data was collected using a HappyOrNot Smiley Terminal™. In total, 215 users provided feedback on their VR experience over 142 consecutive days. Eighty percent of respondents found their VR experience to be positive (n = 173). A correlation between student recruitment and VR booth use could not be made. However, the booth proved to be effective in displaying student work and has received positive praise from stakeholders (i.e., students, faculty, staff, administration, and community).

Introduction

Recruiting students into engineering technology (ET) programs is difficult. So difficult in fact, that a recent two year study by the National Academy of Engineering (2017), conducted to "shed light on the status, role, and needs of ET education in the United States" (p. vii), concludes that most Americans are unfamiliar with ET as a field of study or a category of employment. If most Americans, which includes parents and the K-12 education system, are unaware, how must post-secondary ET programs compete in student recruiting? The National Academy of Engineering (2017) recommends stronger engagement between K-12 and the leaders of ET programs and new marketing and branding efforts. In line with both recommendations, two faculty members from a leading ET program attempted an innovative multidisciplinary project.

The Proposal. The proposed project was to design and build a VR experience for the lobby of the Purdue Technology Center of Southeast Indiana. The center is home to multiple small businesses and Purdue Polytechnic New Albany (PPNA). PPNA offers a variety of majors focused in engineering technology (ET), such as Mechanical Engineering Technology (MET) and Electrical Engineering Technology (EET), and Computer Graphics Technology (CGT). The proposal consisted of refurbishing and converting a standalone antique phone booth into an interactive VR booth experience. The full restoration included breakdown, cleaning, cosmetic improvements, and VR equipment integration.

In the spring of 2016, the designers proposed the project to administration after positive preliminary discussions with faculty, staff, and building operations. The project was scheduled to begin in May 2016 and final delivery occurring in August 2016. The proposed budget for labor and material was approximately $5,000. The project goals were to use the VR booth for potential student recruitment, current student demonstrations, and community outreach.

Figure 1. VR Equipment

Project Details. The VR booth was equipped with the Oculus Rift head mounted display (HMD), Oculus remote, and Oculus sensor (https://www.oculus.com/rift/) (see Figure 1). An Asus G11CD Oculus ready desktop personal computer (PC) (https://www.asus.com/Tower-PCs/G11CD-Oculus-Ready/) powered the system. To allow for external third party viewing and control of the VR experience, the designers installed a touch screen monitor on the outside of the booth (http://www.dell.com/ed/business/p/dell-p2314t/pd).

To collect usage and satisfaction data of the VR booth a HappyOrNot Smiley Terminal™ (https://www.happy-or-not.com/en/measure/) was utilized (see Figure 2). The designers placed the terminal next to the booth and it collected data 7 days a week from 7AM to 7PM from August 22, 2016 to December 10, 2016. The smiley terminal captured user feedback with universally recognizable four smileys ranging from dark green (very happy) to dark red (very unhappy). The terminal transmitted the collected data via a secure cellular network to a cloud-based reporting service.

To promote the VR booth and encourage student involvement in the project, the designers held a poster design contest for current PPNA students (see Figure 3). The contest theme was *visiting other worlds*, and the designers planned to display the winning poster on the outside of the VR booth.

Figure 2. Smiley Terminal

Additional student involvement occurred through the contracting of a CGT student for programming. The task was to design and build a custom VR demo that would highlight the affordances of VR and incorporate a digital replica of the booth to encourage higher levels of immersion. See Durcholz, Webster, and Kopp (2016) for video. Faculty, staff, and administration would use the final deliverable to demonstrate PPNA student capabilities to potential students and the community.

Figure 3. Call for Poster Contest Flyer

Results

The refurbishment of the VR booth took approximately 2 months. Final costs were slightly over $4500 (see Figure 4 and Figure 5). See Figure 6 for the winning poster design.

Figure 4. VR Booth Front

Figure 5. VR Booth Side

The smiley terminal collected responses from 215 users (see Table 1). Overall, 80% of the respondents rated their VR experience as positive (i.e., dark green or light green smiley) and 20% negative (i.e., dark red or light red smiley).

Table 1. Smiley Distribution

Smiley	Count (%)
	140 (65)
	33 (15)
	19 (9)
	23 (11)

October was the highest usage month and Tuesday the highest usage day of the week. This is due in part from the increased volume of foot traffic in the building during a community event (i.e., Purdue Pumpkin Chunking Competition) held on campus grounds. See Appendix for monthly, weekday, and hourly distributions.

The contracted CGT student created a VR demo that users experienced sitting down, which helped to reduce the possibility of motion sickness and injury to the user. It had autonomous navigation and heading tracking (orientation and position). See Durcholz et al. (2016) for video.

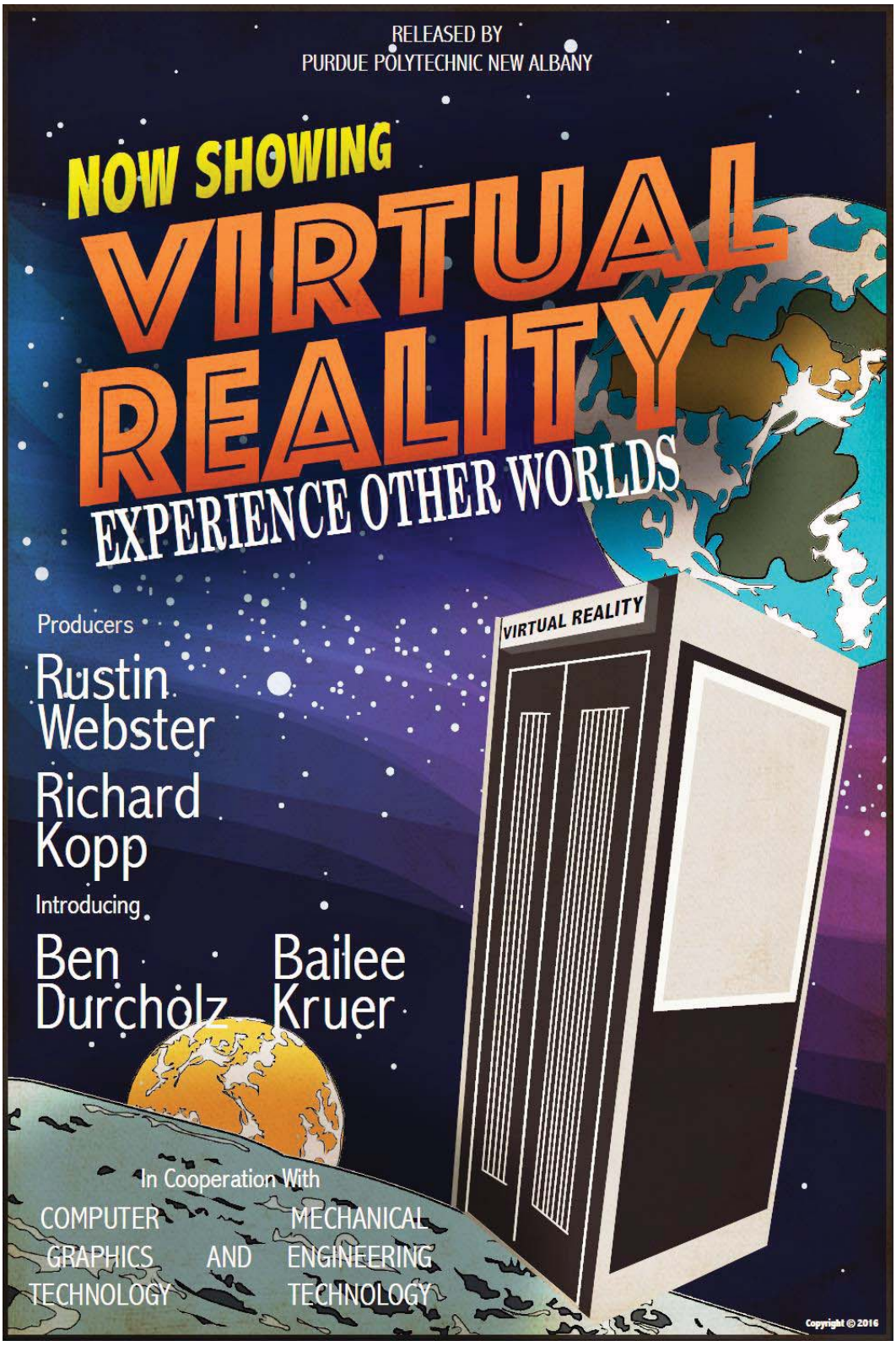

Figure 6. Poster Contest Winner

Discussion

HappyOrNot, a global leader in instant customer and employee satisfaction reporting, offered a unique opportunity to collect feedback at the point-of-experience. The designers believe that the smiley terminal encouraged feedback participation over an online survey. The cloud-based reporting portal simplified data collection and analysis.

The designers tried to setup the booths hardware, electronics, and software in a manner that would result in a low maintenance, safe, easy to use, and enjoyable VR experience. The VR booth was unsupervised the majority of the time, thus requiring the display of simple to follow usage instructions. Before entering the VR booth, the designers directed the visitors' attention to the touch screen monitor, which displayed a short instruction list (see Figure 7). Users often ignored the instruction of *return to home*, as the designers often found the booth to be unoccupied and left in the middle of a demo.

To prevent theft, the HMD and remote were secured to the booth walls by a security tether (https://usa.multplx.com/products/jplug_loop). The sensor and PC were secured through refurbishment design efforts, such as built in mounts and anti-tamper connections. Overall, the booth required very little attention from the designers after delivery. However, occasional system updates to the PC operating system and VR software required down periods.

To encourage VR hygiene best practices, individual antibacterial wipes were placed inside the booth. The wipes were anti-static, streak free, lint-free and safe to use on all components. Based on the frequency of needing to reorder additional wipes, the designers believe that most users clean the VR equipment prior to using.

Figure 7. VR Booth Instructions

Conclusion

The VR booth has proved to be an effective community outreach tool (Kaufman, 2017) and a medium to demonstrate current students' VR work. However, the designers could not study the effect the VR booth had on student recruitment. To do so, they would need to incorporate the actions of student services, who conduct the majority of student recruiting, and track potential students' use of the VR booth and future enrollment at PPNA after such use.

The declining prices of consumer VR equipment, such as the Oculus Rift and HTC Vive™, present institutions with a new tool for student recruitment and highlighting student work. Integrating such state-of-the-art interactive equipment into antique or unique furniture allows designers and researchers an exciting and unique opportunity.

References

Durcholz, B., Webster, R., & Kopp, R. (2016, 11 August). *VR Booth Demo* [Video file]. Retrieved from https://youtu.be/9xewoQ3YiQ0

Kaufman, S. (2017). *Virtual Reality Goes to School*. Retrieved from: http://extolmag.com/business-spotlight/virtual-reality-goes-to-school/

National Academy of Engineering (2017). *Engineering technology education in the United States*. Washington, DC: The National Academies Press. doi: 10.17226/23402

Appendix

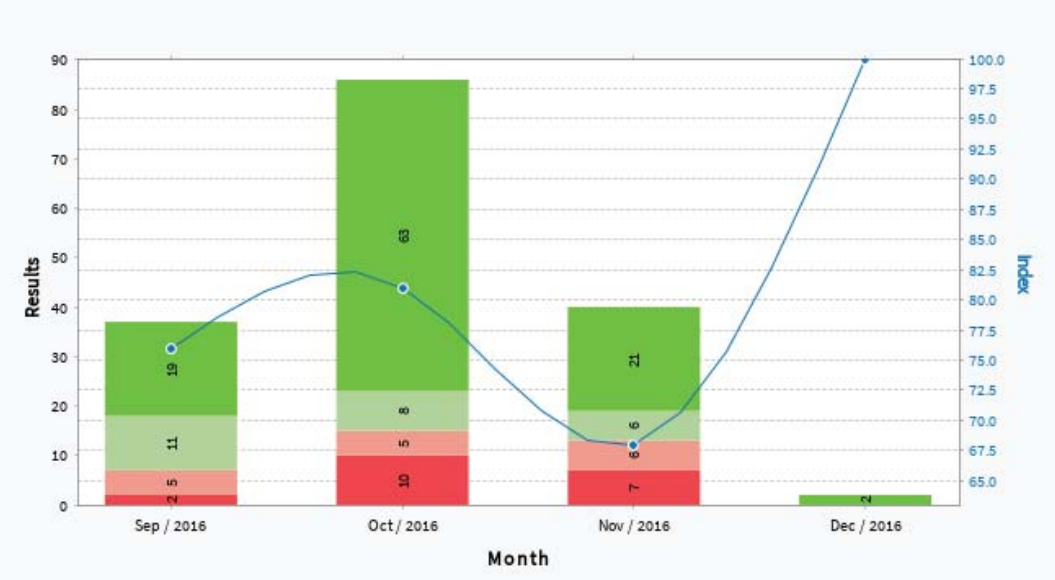

Figure 8. Monthly Usage Distribution

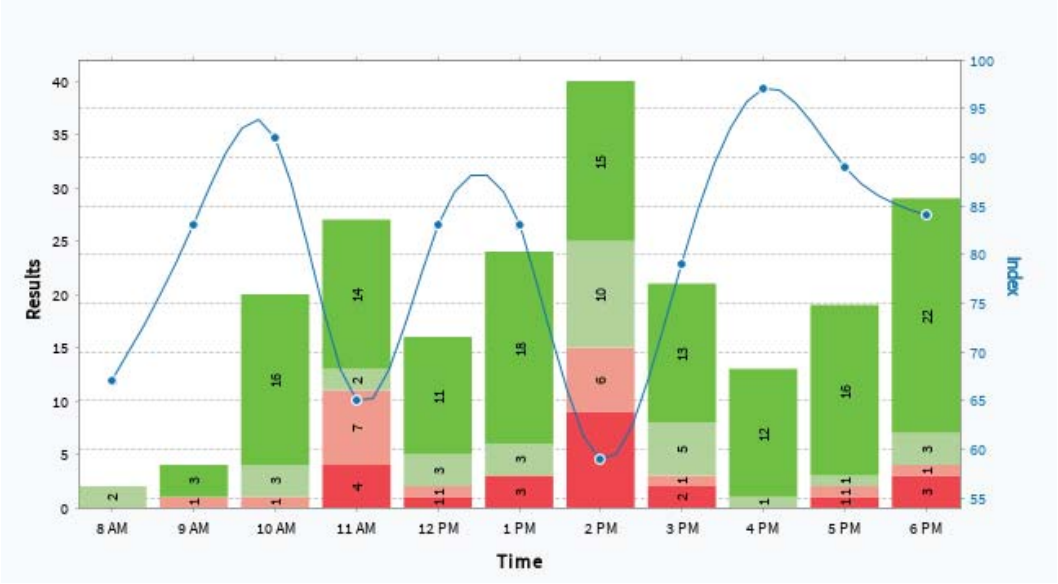

Figure 9. Hourly Usage Distribution

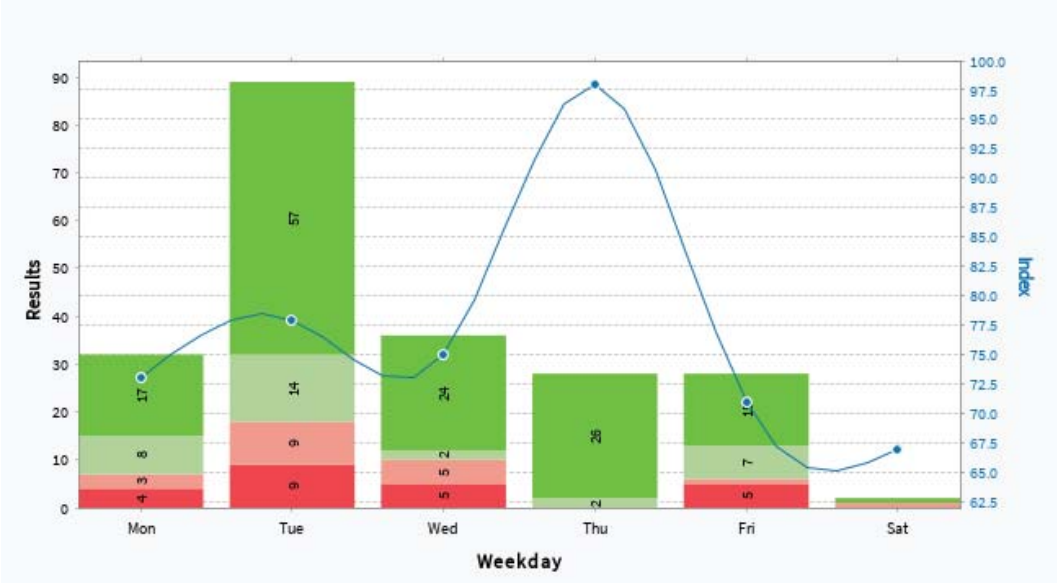

Figure 10. Daily Usage Distribution