Virtual Reality: Providing Modern-Day ‘Sliding Glass Doors’

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Books that are “mirrors” allow our readers to find themselves in the collection, helping them feel seen and validated. The “windows” provide opportunities for readers to look outside themselves to view worlds unlike their own, opening their eyes to different perspectives. And, lastly, “sliding glass doors” transport readers into other worlds to experience different perspectives and remains critical for promoting deeper understanding and empathy among our learners. However, modern-day library collections also encompass technology tools that may complement books in providing “mirrors, windows, and sliding glass doors.” One such technology tool is virtual reality (VR), which provides a “computer-generated digital environment that can be experienced and interacted with as if that environment were real” (Jerald 2015, 9). By harnessing the power of VR, school librarians have the ability to transport learners to times and places that would otherwise be inaccessible to them in a traditional learning environment. Consequently, VR is a powerful and engaging experiential technology tool we may harness to embody and extend Bishop’s concept in order to provide modern-day “sliding glass doors” to our school communities.

Background

This idea of VR embodying and extending “sliding glass doors” piqued my interest when I was in the early stages of implementing...
VR in my middle school library in 2016. I viewed Chris Milk’s 2015 TED Talk where he asserted VR was the “ultimate empathy machine.” He elaborated: “You feel your way inside of it. It’s a machine, but inside of it, it feels like real life, it feels like truth. And you feel present in the world that you’re inside and you feel present with the people that you’re inside of it with.”

It struck me that his description of the cinematic virtual reality (CVR) film world was similar to Bishop’s description of “sliding glass doors”. “[R]eaders have only to walk through in imagination to become part of whatever world has been created or recreated by the author” (1990). Through my casual observations of my middle school learners’ experiences using VR in my school library—whether they were on a Google Expeditions field trip or viewing Traveling While Black on our Oculus head-mounted displays (HMDs)—Milk’s and Bishop’s ideas seemed to align. It was these early experiences and observations of VR in my school library that became the impetus for enrolling in a PhD program in Instructional Technology at Northern Illinois University to research VR and how it affects adolescent learners’ empathic responses.

Early in my PhD research, I discovered that Milk’s assertion of CVR as the “ultimate empathy machine” also inspired many other researchers, who studied how CVR impacts adults’ short-term and long-term emotional responses, empathy, sympathy, and pro-social behaviors. However, there was and continues to be very little published research regarding the effect this experiential technology has on K-12 learners’ empathic responses. With an increasing number of school librarians harnessing VR within their school communities, it became apparent how vital it is to better understand the effects of VR on learners.

Research Study

With support from my committee members, I used my candidacy exam to design a quantitative study utilizing a pretest-post-test randomized experimental design to examine how CVR affects learners’ cognitive and affective empathic responses (Trudeau et al. 2023). In this study, “Breaking the Fourth Wall: The Effects of Cinematic Virtual Reality Film-Viewing on Adolescent Students’ Empathic Responses,” I addressed the following research questions:

1. Is there a statistically significant difference in empathy scores, as measured by Vossen et al.’s Adolescent Measure of Empathy and Sympathy (Vossen et al. 2015), between middle school learners viewing a story in CVR and those viewing it in 2D format?

2. Is there a statistically significant difference in the mean change scores in empathy subscales for adolescent males and females viewing a film in CVR format?

3. Is there an interaction effect between gender and film format on the mean change scores in adolescent learners’ empathy subscales?

This study was conducted in a middle school library with 66 seventh-grade Social Studies learners (32 males, 33 females, and 1 student identifying as nonbinary). Of these 66 participants, 86.4% (n = 57) reported using VR previously, mostly for gaming, while 13.6% (n = 9) had no prior experience using VR. Learners were randomly assigned to either the control or treatment group for the study.

One week before the experiment, the learners completed Vossen et al.’s (2015) Adolescent Measure for Empathy and Sympathy (AMES) as a pretest. This tool, made up of 12 statements that are rated by participants using a five-point Likert scale, was selected because it was developed specifically for children 10 to 15 years old. AMES also is one of the only tools that distinguishes between sympathy and two types of empathy while all the other instruments intended for adolescent learners combined sympathy and empathy.

It is important to note that two types of empathy are measured through AMES—cognitive empathy and affective empathy. Cognitive empathy is also called perspective-taking, or the ability of an individual to put themselves in another’s shoes. Affective empathy is a shared emotional response with another individual based on a stimulus. These two ways of exploring empathy were critical for exploring how CVR may be an “empathy machine” or provide “sliding glass doors” for learners.

All students then viewed The Displaced (2015), created by Imraan Ismail and Ben C. Solomon of VR storytelling company Within (previously Vrse) in collaboration with The New York Times. This 11-minute documentary film explores the lives of three refugee children—Oleg, an 11-year-old boy living in eastern Ukraine; Chuol, a 9-year-old boy from South Sudan; and 12-year-old Hana from Syria. The film is told through their perspectives and with their own words, translated with English subtitles. Learners in the control group viewed the film in a two-dimensional (2D), 360-degree format on YouTube using their Chromebooks and headphones. Those in the experimental group viewed it in CVR format using Oculus Go HMDs and headphones.
Upon completing their viewing of the film, all participants once again completed AMES.

To address our research questions, several statistical tests were conducted for this study. Six outliers were first identified by carefully examining the raw data in IBM SPSS Version 28, through a Mahalanobis Distance Test, and box plot examination; their data sets were removed from the subsequent analysis. In order to compare the means of two variables of a single group, paired-sample t-tests were carried out to determine if there was statistical significance in the changes in mean subscale scores—both for participants viewing the film in the two different film formats and to examine mean scores for both male and female participants. Gain scores were also calculated using the post-test and pretest scores for each of these subscales. Two-way multivariate analysis of variants (MANOVAs) was then conducted to determine how gender and film format affect gain scores for both cognitive and affective empathy scores. Finally, a two-way MANOVA was carried out to determine if there was an interaction effect between gender and film format.

Findings

This study demonstrated that viewing a film in CVR resulted in a greater increase in both cognitive and affective empathy subscale scores when compared to the traditional 2D format, especially for male participants.

• There was a statistically significant increase in cognitive empathy for participants viewing the film in CVR.

• Participants viewing the film in both 2D and CVR formats demonstrated a statistically significant increase in affective empathy with the group viewing the film in CVR, indicating a larger effect size according to Cohen’s d value. (Cohen’s d value is a statistical measure used to determine the magnitude of the difference between two groups in standard deviation units; a larger effect size indicates a greater difference between the two groups.)

• Male participants viewing the CVR had a statistically significant increase in their cognitive empathy scores—11.80% compared to 2.52% for females, who did not have a statistically significant increase.

• Male participants also had a much more statistically significant increase in their affective empathy scores—22.60%; meanwhile females’ scores exhibited a minimal decrease (-0.31%) in these same subscale scores.

• This study did not find any significant interaction effects, but when we examined the main effect in the MANOVA, we observed a statistical significance of gender on the affective empathy gain scores.

Implications for Practice

Due to increased connectivity in a globalized world, it is more important than ever for school librarians to support the development of students’ “global consciousness” in a variety of ways (Rifkin 2010, 178). The AASL National School Library Standards for Learners states students should be able to “[d]emonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community” (2018). This strand focuses on raising awareness, experiencing a range of perspectives, and demonstrating understanding and empathy. While library collections certainly help us achieve these goals, we are also poised as technology trailblazers to support this strand by harnessing the power of VR to complement our collections.

As school librarians, we recognize the power of story; therefore, in this digital age, it is vital we embrace a modern means for storytelling, CVR. Also called “immersive narratives” by Bosworth and Sarah (2019), CVR films allow students to experience omnidirectional viewing of another environment through HMDs, resulting in a powerful viewing experience—one that may provide a perspective vastly different than their own.
intermittent space traditionally present when a student views a 2D film on a Chromebook or tablet.

In turn, a CVR film “breaks the fourth wall” where students experience more intimate interactions with the characters in the film, looking them in the eyes and thus feeling the characters are speaking directly to them. Ultimately, this evokes a much deeper connection during the viewing experience (Bosworth and Sarah 2019, 25).

VR filmmaker Nonny de la Peña (2015) asserted in her TED Talk that CVR is a film medium that allows students to experience “a story that you would remember with your entire body and not just with your mind.” These kinds of memorable experiences can have a profound impact on our students, not just in their understanding of concepts or by evoking emotional responses but also in their perception of themselves and their place within a global community.

With an increasing number of CVR films available, school librarians should work with colleagues to explore films that would supplement classroom instruction—either by providing background and context for particular concepts or by using them as an extension for learning. Films such as *The Displaced* used in this study as well as many others—Traveling While Black, Notes on Blindness, Colette, and Home After War—are powerful stories from diverse perspectives that will captivate learners, raise awareness, and as my research has demonstrated, increase students' cognitive and affective empathic responses. Ultimately, these films have the potential to foster a deeper understanding of the interconnectedness of humanity and how it contributes to global consciousness.

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**Works Cited:**


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