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Letter to the Editor

Near-peer mentoring and virtual reality for adult basic life support education in high school students



Abstract

Bystander cardiopulmonary resuscitation (CPR) can improve cardiac arrest survival; however, lack of willingness or community training lead to low bystander CPR rates. Virtual Reality (VR) Cardiopulmonary Resuscitation (CPR) training among high-school students is an innovative method to train bystander CPR skills. VR is well received by “technology natives” inherent among high school students and induces a greater sense of presence and agency compared to office-based CPR training. We describe a pilot trial with high school students using a near-peer mentoring framework using a single-player VR CPR training software (CBS, TetraSignum, Seoul, KR) in which both students collaboratively coach each other while performing in-VR CPR. Our pilot program recruited 3 pairs ($n = 6$) high school students during a local summer camp. During each 1.5-hour session, each pair learned about CPR and basic life support through a VR avatar either in-VR or displayed on a TV screen. The in-VR student practiced on the manikin while the other student could take notes on paper. Then each student was assessed on their CPR skills in-VR on a cardiac arrest avatar superimposed onto a real QCPR manikin, coached by the other student who could visualize CPR quality projected on the TV screen. The students then switched roles and debriefed about their experience.

Overall, the students universally performed well and appreciated the collaborative nature of the learning experience. Further study is needed to explore barriers and enablers to implementation of VR CPR training at the high school level.

Keywords: Basic life support, Virtual technology, High school students, Near-peer mentoring

To the Editor,

Bystander cardiopulmonary resuscitation (CPR) can improve cardiac arrest survival; however, lack of willingness or community training lead to low bystander CPR rates.¹ Innovative bystander training could increase general public CPR awareness and skills and bystander CPR participation.² High school students are an ideal group for bystander CPR training. Both in-school and out-of-school innovations have targeted this generally healthy, motivated group.³ Virtual reality (VR) is a novel method to enhance CPR engagement and training.⁴ VR is well received by “technology natives” inherent among high school students and induces a greater sense of presence and agency compared to office-based CPR training.⁵ However, optimal and best practices for VR and CPR training, especially in the high school learner population, have not been proposed.

We conducted our VR CPR training using the framework of near-peer mentoring⁶; this methodology has been used in various longitudinal learning activities in science, technology, engineering, and mathematics.⁷ Near-peer mentoring is a learner-centered model, where the pairing of mentors and mentees close in age and development allows for the mentors to draw on immediate personal experiences to connect with mentees and facilitate connections and

reflections integral to the experiential learning process.⁸ Near-peer mentoring has been used in short-term settings such as a science camp⁹ and we applied the same principles for our healthcare camp for high school students.

Every year Children’s Hospital Los Angeles (CHLA) conducts a one-week-long summer camp for adolescents interested in healthcare careers. Each day campers are assigned to different units throughout the hospital for job shadowing. The Las Madrinas Simulation Center hosted a session on learning CPR using VR through a hybrid simulation product (CBS, TetraSignum(r), Seoul, KR). To maximize engagement, we proposed an innovative method using a pair of students and for each student to coach the other, similar to Hunt’s CPR Coach role.¹⁰ Because VR frequently requires facilitation from someone outside of the virtual world, we positioned one student in the VR headset and the other observing the projected screen who could guide and assist the other student.

CPR performance using the near-peer mentor system was successfully validated by the researcher and is prepared for future studies. Overall, we have piloted six students during the camp and found

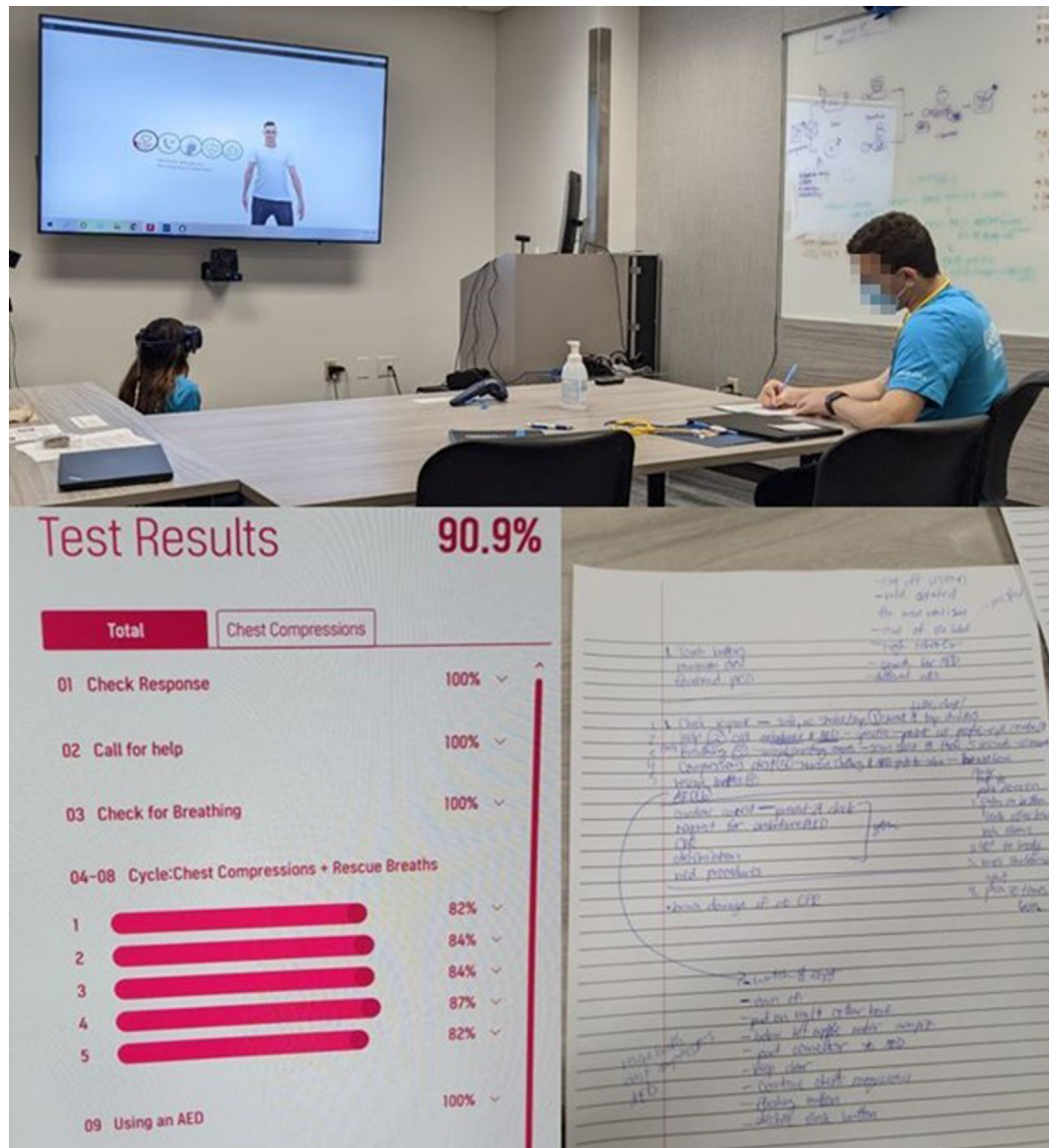


Fig. 1 – The student on the right is self-teaching how to perform CPR by observing the VR CPR performance done by a student on the left. A mixed results are collected in a form of CPR performance and notes.

the sessions feasible and engaging. The future work will collect mixed method results (Fig. 1) to present the benefits of using a near-peer mentor system in teaching the younger generation CPR with VR.

The findings from this study will help guide future interventions in bringing VR CPR training to high schools. Ultimately, we aim to understand the younger generation's perception of the overlap between CPR training and VR technology.

Conflict of interest

Nino Fijačko and Cristian Abelairas-Gomez are members of the ERC BLS Science and Education Committee and the ILCOR Task Force Education Implementation and Teams. Others have no conflicts of interest to disclose.

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Laquanda T. Knowlin^{a,b,*}
 Hyojin Jenny Min^c
 Cristian Abelairas-Gomez^{d,e}
 Deborah R. Liu^f
 Nino Fijacko^{g,h}

^a *Las Madrinas Simulation Center, Children's Hospital Los Angeles, USA*

^b *Division of Pediatric Surgery, Children's Hospital Los Angeles, USA*

^c *Institute for Nursing and Interprofessional Research, Children's Hospital Los Angeles, USA*

^d *CLINURSID Research Group, Psychiatry, Radiology, Public Health, Nursing and Medicine Department, Universidade de Santiago de Compostela, Spain*

^e *Faculty of Education Sciences, Universidade de Santiago de Compostela, Spain*

^f *Division of Emergency Medicine & Transport, Children's Hospital Los Angeles, USA*

^g *University of Maribor, Faculty of Health Sciences, Maribor, Slovenia*

^h *ERC Research Net, Niels, Belgium*

* Corresponding author at: Children's Hospital Los Angeles Las Madrinas Simulation Center, 4650 Sunset Blvd. Mailstop 75, Los Angeles, CA 90027, USA.

E-mail address: knowlin@chla.usc.edu (L.T. Knowlin).