

Creating and Validating DramaZoom as Teaching Method for Diverse Student Populations

Helena Carvalho, Virginia Tech Carilion School of Medicine. Patricia A. Halpin, University of New Hampshire at Manchester. Elke Scholz-Morris, Methodist College of UnityPoint Health. Rosa de Carvalho, Prefeitura da Cidade do Rio de Janeiro, Brazil.

Abstract

Background:

Health science students must learn a lot of information in a finite amount of time. A common learning strategy is to rely on memorization and superficial learning. We as educators must promote teaching that not only engages students, but also leads to deep and meaningful learning. Dramatizations were shown to be a fun way to engage students in learning physiology in face-to-face settings (Halpin et al 2021; Connor and Carvalho 2019; Carvalho 2011) and were recreated as videos using Dramatization via Zoom (called DramaZooms). Six DramaZooms were used to teach complex topics in endocrine physiology to students in this innovative way. The goal of this study was to assess student learning after using DramaZooms in three different student populations. Another goal was to analyze if the delivery mode, in person or virtual, impacted student learning.

Methods:

Three physiology instructors collaborated on Zoom to create the DramaZooms: Scripts were written, Zoom backgrounds were designed, props constructed, and videos recorded and edited using Active Presenter software (atomisystems.com). A total of six DramaZooms were created focusing on hormone signaling with negative feedback in different contexts. IRB approval was obtained. Students completed a pretest that focused on the content of each DramaZoom. After watching each DramaZoom, they took a posttest to assess their understanding. Results from undergraduate professional, undergraduate liberal arts, and medical students at three different academic institutions were compared. We also investigated if the outcome was different if the DramaZooms were presented face-to-face during regular classroom teaching, or asynchronous in a virtual classroom.

Results:

The compiled data showed that all three groups of students improved significantly after viewing DramaZooms. There was no statistically significant difference in pretest results among the two undergraduate groups of students ($P=0.11$), while medical students scored higher ($P<0.05$). Posttest results indicated that learning occurred independently of delivery mode. Students' comments were very positive, stating that the videos were fun to watch, and recommended them for visual learners.

Conclusion/Discussion

In conclusion, viewing the DramaZooms create an opportunity for a fun learning experience that improves knowledge regardless of the mode of delivery. Future research will be done to investigate the long-term retention of content.

Background

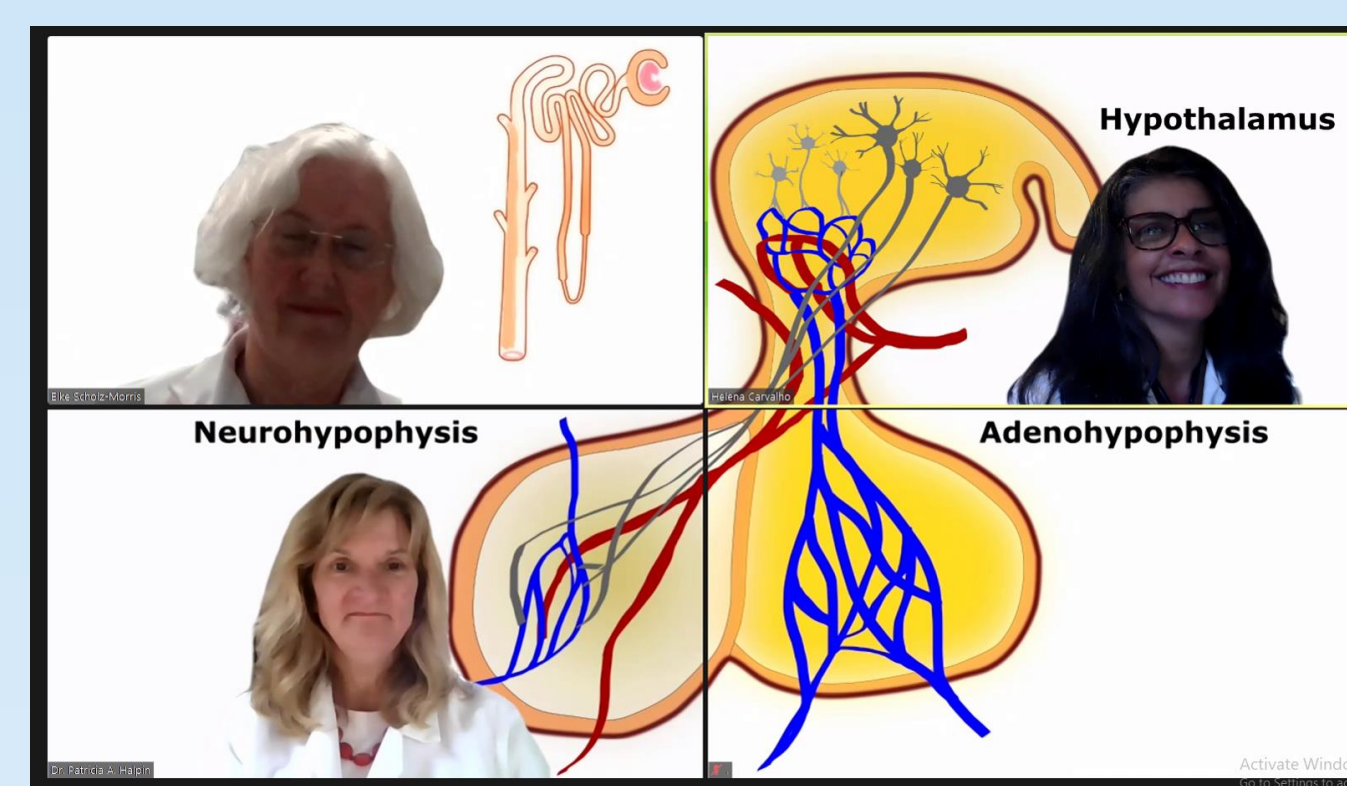
Students must learn a lot of information in a finite amount of time. A common learning strategy is to rely on memorization. We as educators, must promote teaching that not only engages students, but also leads to deep and meaningful learning. Dramatization has been shown to be a fun way to engage students in learning physiology in face-to-face settings (Halpin et al 2021; Carvalho 2011) and was recreated in videos using dramatization via Zoom (called DramaZooms) to teach complex concepts in endocrine physiology by this innovative method.

Goal

The goal of this study was to assess student learning after using DramaZooms in three student populations with diverse career tracks and analyze if the delivery mode impacted student learning.

Methods

Three physiology instructors in three separate locations, collaborated on Zoom to create the DramaZooms: scripts were written, Zoom backgrounds designed, props constructed, and videos recorded and edited using Active Presenter software (atomisystems.com). A total of six DramaZooms were created focusing on hormone signaling with negative feedback in different contexts.



Example of a DramaZoom: Release of antidiuretic hormone by the hypothalamus- neurohypophysis and its action on the kidney *

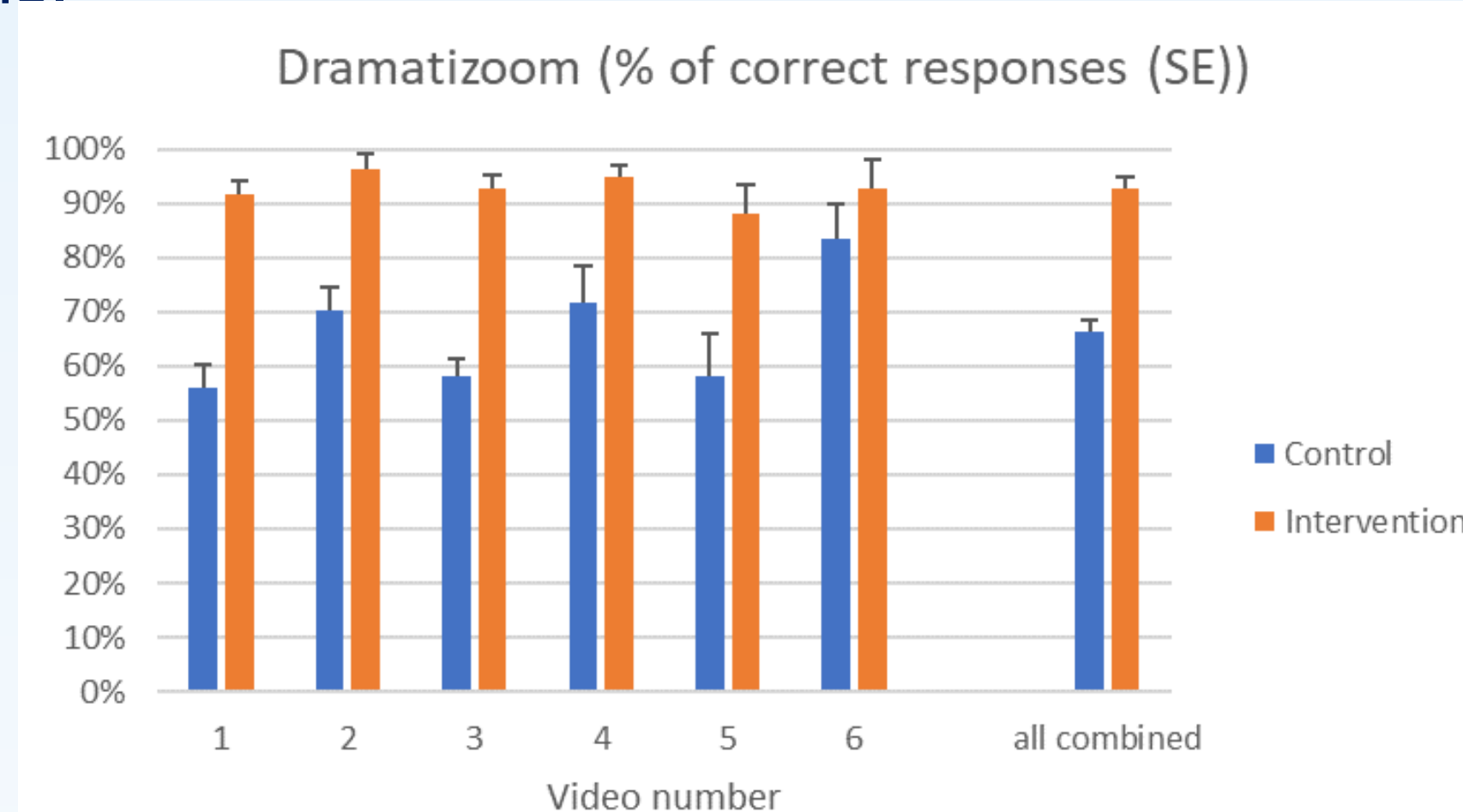
* We thank Daniel Contaifer for designing the background drawings

IRB approval was obtained. Students completed a pretest that focused on the content of each DramaZoom. After watching each DramaZoom, they took a posttest to assess their learning. Results from undergraduate nursing, undergraduate science majors, and medical students at three diverse types of academic institutions were compared. We also investigated if the outcome was different when DramaZooms were presented face-to-face during regular classroom teaching, or asynchronously in a virtual classroom.

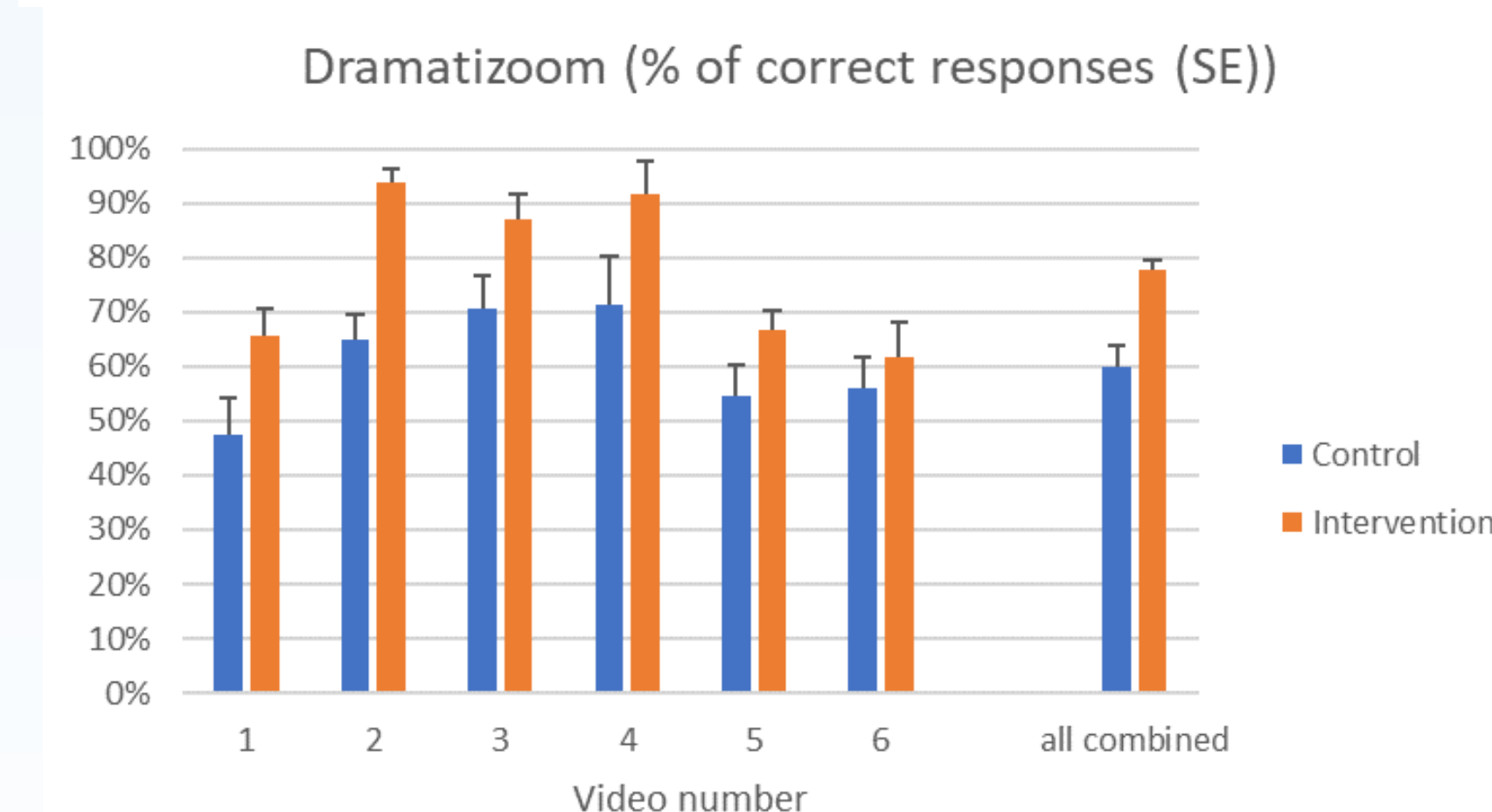
Results

The graphs below show the percentage of correct responses at the pre-test (control) and post-test (intervention) for the six DramaZoom videos at the three different institutions.

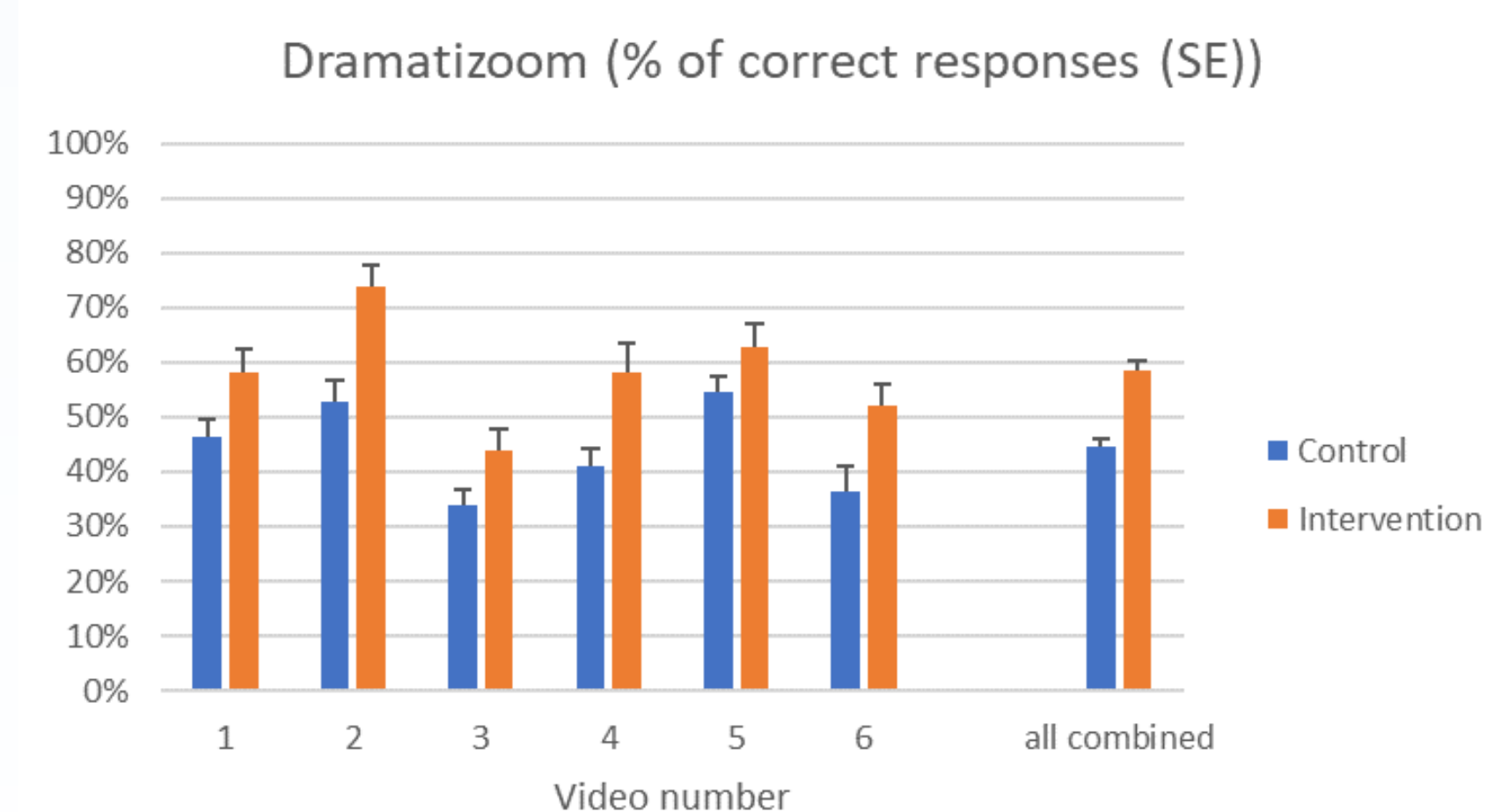
Data from 1st year medical students at VTCSOM in face-to-face setting:



Data from undergraduate science majors 3rd & 4th year at public undergraduate institution asynchronously in virtual classroom:



Data from 1st & 2nd year private undergraduate nursing school in a face-to-face setting:



Results (cont.)

Although students had no prior preparation or access to other material, they demonstrated significant ($P<0.05$) improvement from pre- to post-tests for each video.

	n	Delivery	Pretest	Posttest	P
Medical Students 1 st year	16	In person	66.2%	91.6%	1.28E-08
Science Undergraduates 3 rd & 4 th year	15	Online	49.5%	64.2%	2.17E-06
Nursing Undergraduates 1 st & 2 nd year	26	In person	42.6%	56.2%	6.97E-07

Students' comments were very positive, stating that the videos were fun to watch, and recommended them for visual learners. Remarkable was the immediate student engagement with peer teaching after the videos.

Conclusions/Discussion

DramaZoom videos provide a creative opportunity for a fun learning experience that improves content knowledge regardless of delivery mode and type of school.

Future research will be done to investigate the long-term retention of content.

References

- Halpin PA, Gopalan C. 2021. The combination of flipped teaching with dramatizations enhances student understanding of membrane transport concepts, *The American Biology Teacher*. 83(5): 337-340. <https://doi.org/10.1525/abt.2021.83.5.337>
- Halpin PA and Gopalan C, 2021 Using dramatizations to teach cell signaling enhances learning and improves students' confidence in the concept. *Advances in Physiology Education*, 45, 89-94. <https://doi.org/10.1152/advan.00177.2020>
- Connor BW, Carvalho H. Using Dramatization to Teach Starling Forces in the Microcirculation to First-Year Medical Students. *MedEdPORTAL*. 2019;15:10842. Published 2019 Oct 18. doi:10.15766/mep_2374-8265.10842
- Carvalho, 2011 A group dynamic activity for learning the cardiac cycle and action potential. *Advances in Physiology Education*, 35: 312-313. DOI: 10.1152/advan.00128.2010
- Carvalho H, West CA. 2011. Voluntary participation in an active learning exercise leads to a better understanding of physiology. *Advances in Physiology Education* 35(1):53-8. DOI: 10.1152/advan.00011.2010.



University of
New Hampshire
at Manchester



VTC | Virginia Tech Carilion
School of Medicine

