

Virtual Reality

Technical
Specs

VR in
Studio Art

Educational
VR

VR and
Dystopia

The People



Darel Bennedbaek, Cyndi Berrio, Tim Buttler, John Hoyt, John McDowell, Wilmer Tenerife, Julie Thompson

The
Computer

The
Headset

What are
others
doing?

Technical Specs

Alienware
GTX 1060
16GB RAM
i7-7700HQ CPU @ 2.80GHZ



The Headset



HTC Vive



2x light stands - slightly heavy duty.

VR/AR Growing



University of Calgary virtual reality studio (<https://library.ucalgary.ca/vr/>)



McGill virtual reality and augmented reality bookings (<https://www.mcgill.ca/library/branches/research-commons/vr-ar>)



Indiana University Virtual and Augmented Reality Lab (<https://ulib.iupui.edu/tech/VR>)

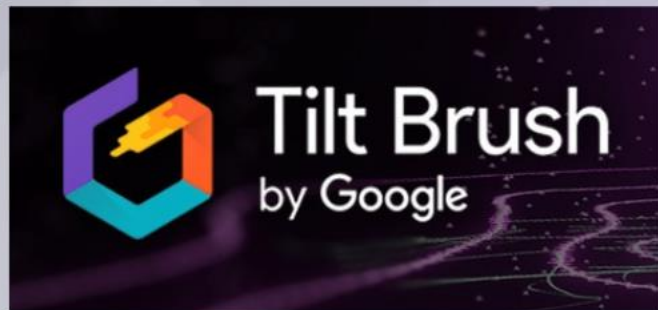


vrCave - Rossol brothers start-up with help from Tom Viinikka, U of A alumni mentor (<https://www.vrcave.ca/>)



Immerge Labs - UPenn upstart company (<http://immergelabs.strikingly.com/>)

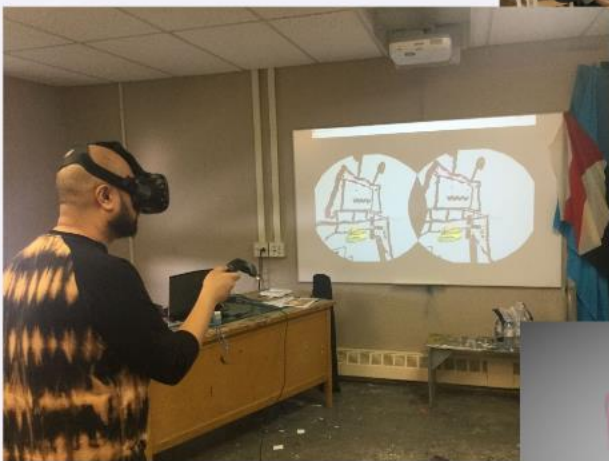
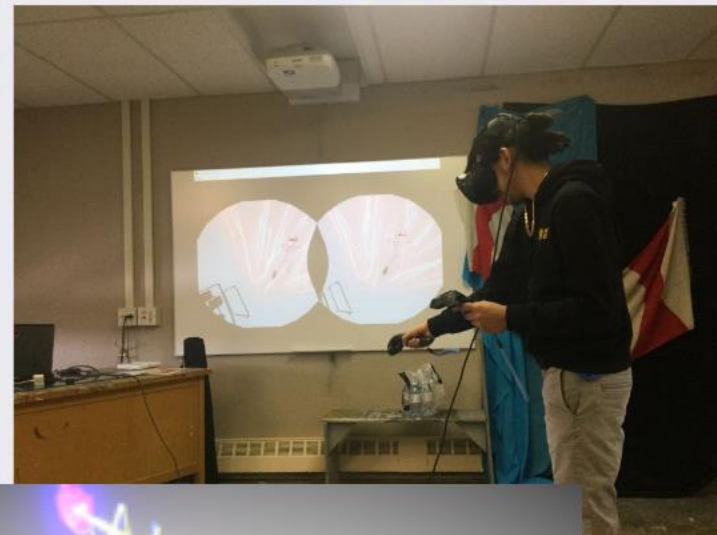
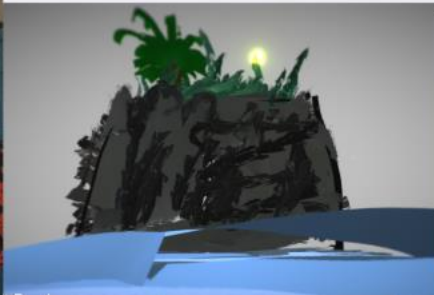


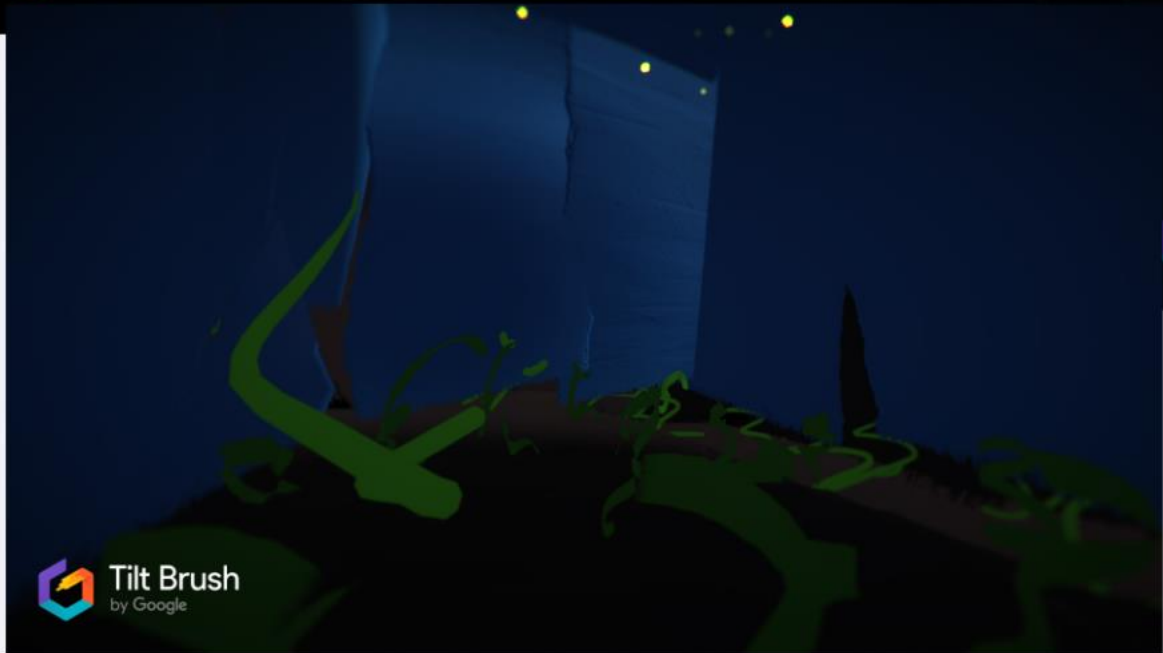


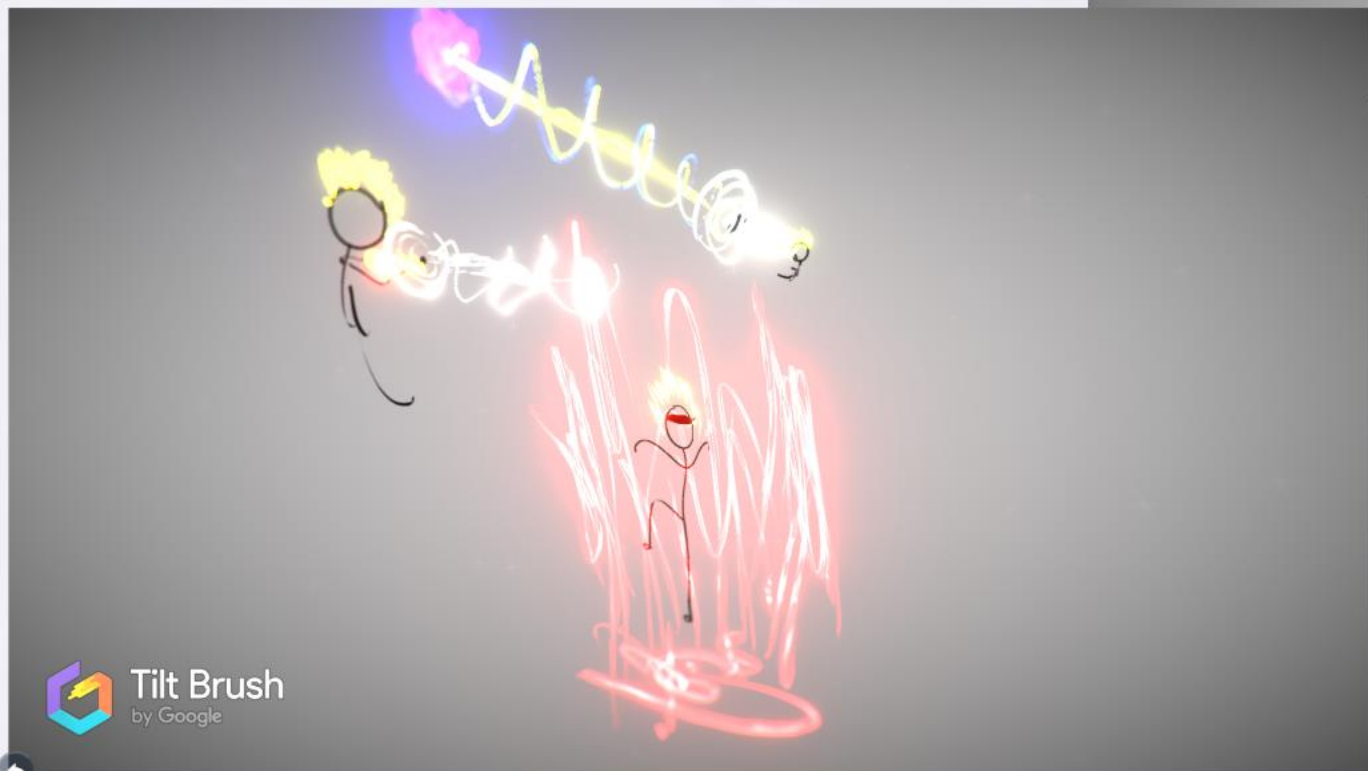
Artists &
Art I

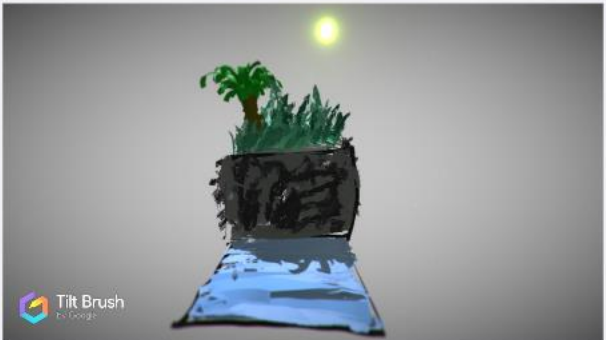
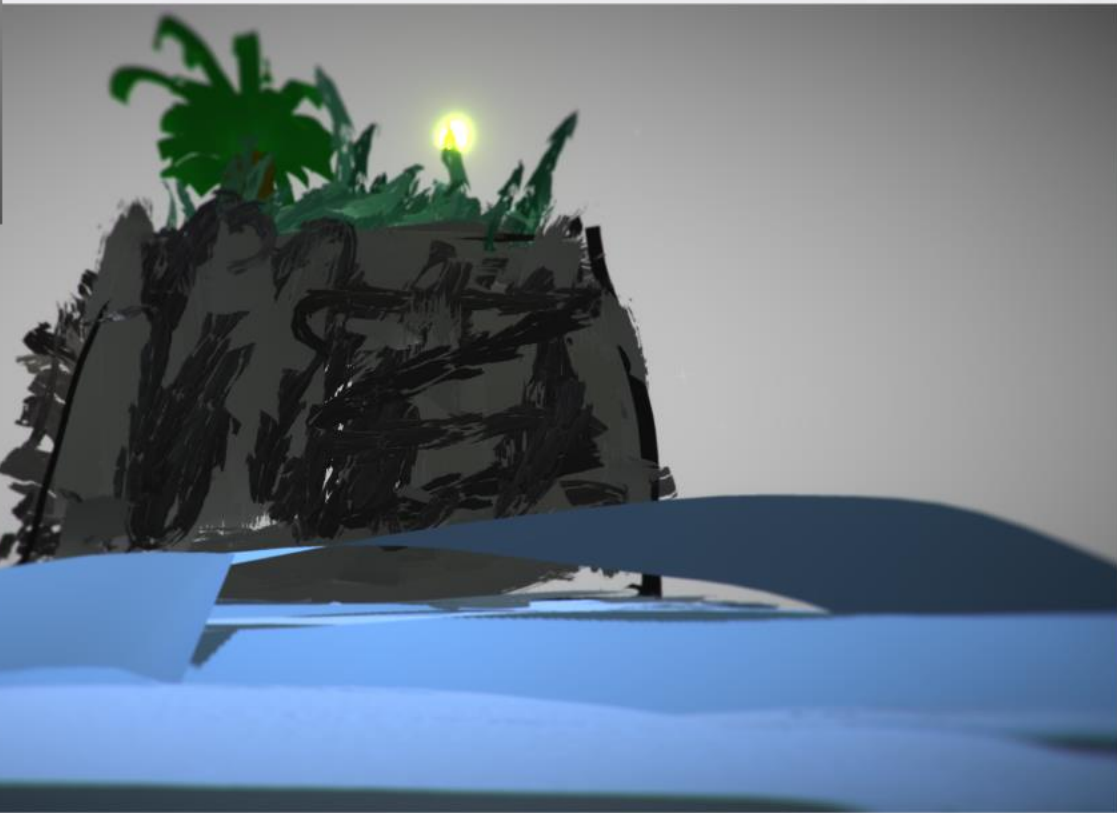
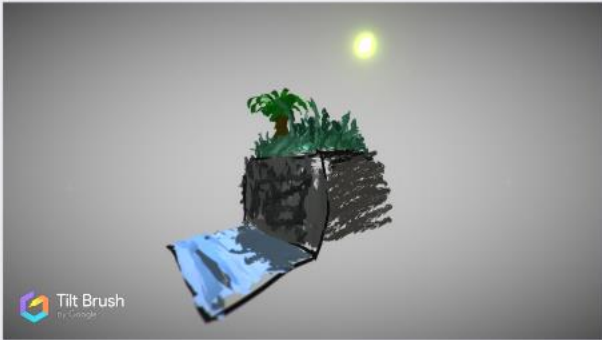
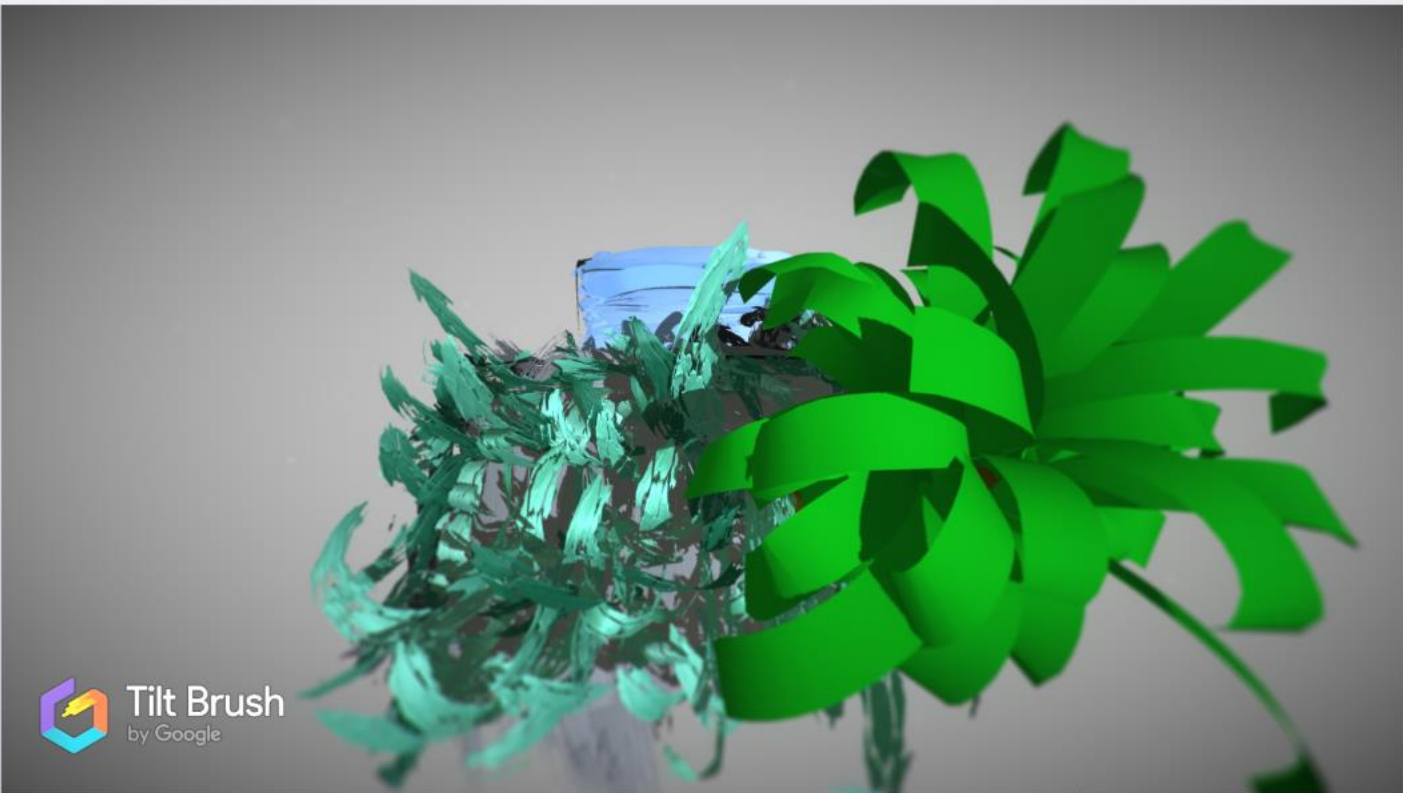
Artists &
Art II

Impressions









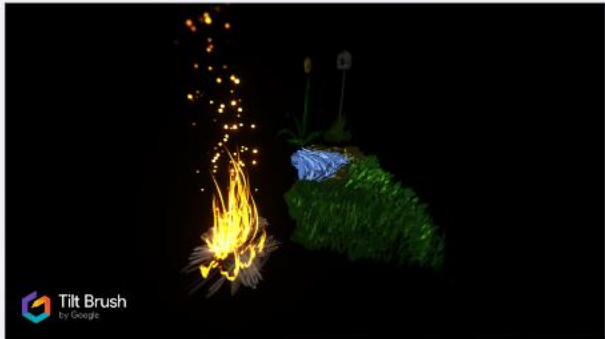
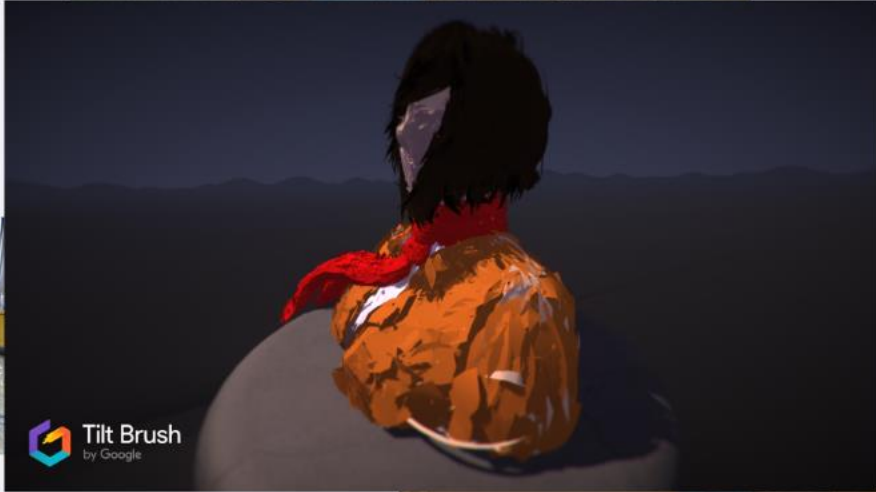
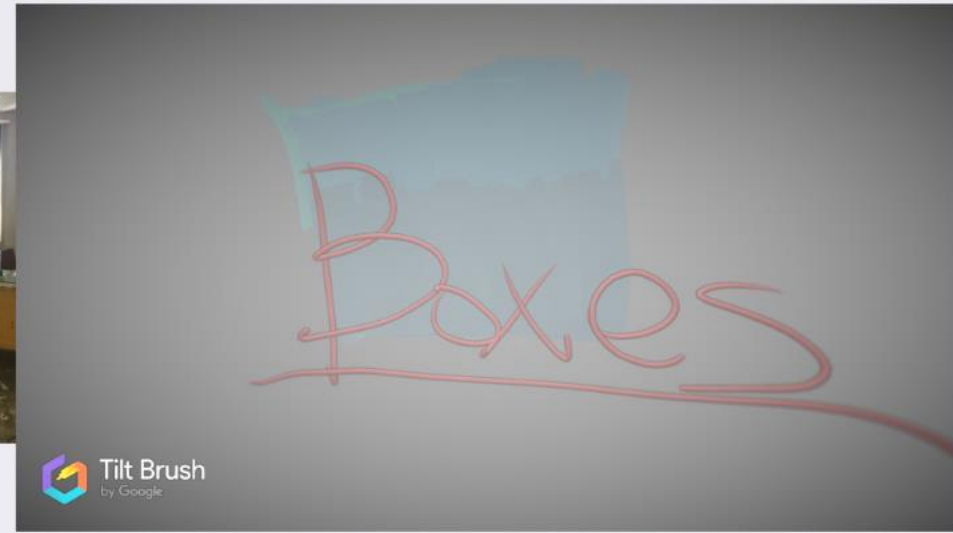


BURP!



Tilt Brush
by Google





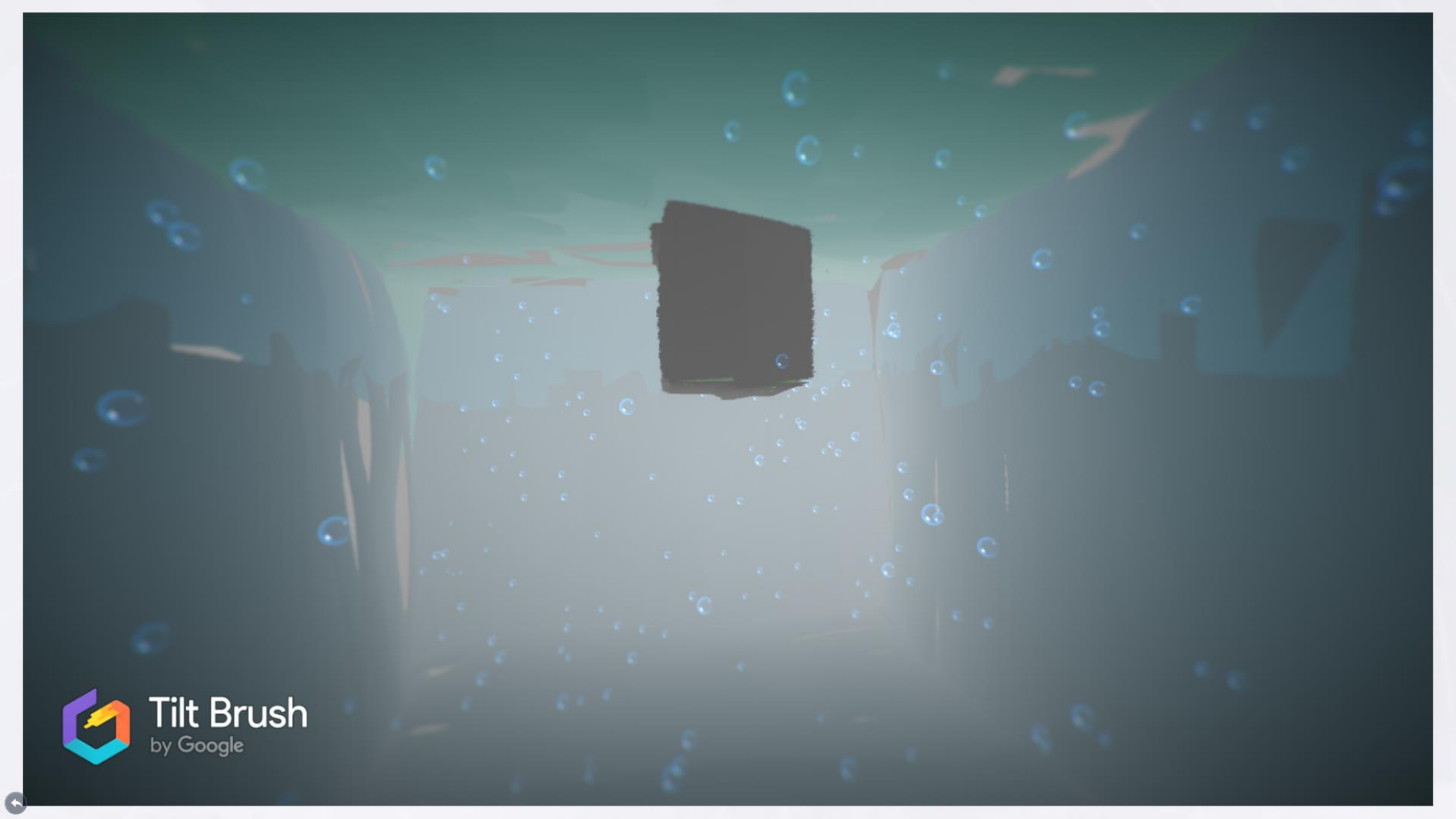


Boxes



Tilt Brush
by Google





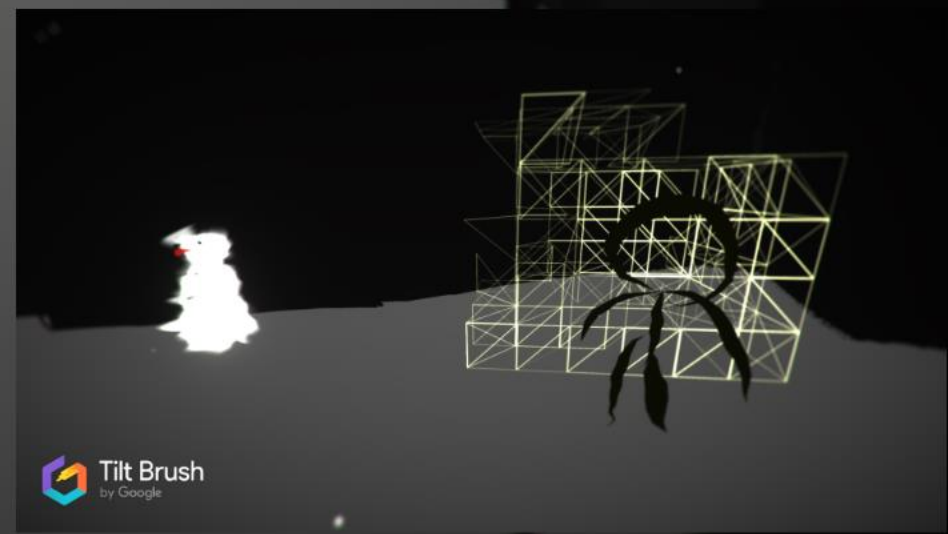
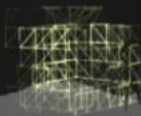
Tilt Brush
by Google





Tilt Brush
by Google





 Tilt Brush
by Google

 Tilt Brush
by Google

Student Responses - Art

"Wow" - pretty much all of them upon first putting on the headset, then again when using Tiltbrush

"It's harder than it looks, but it's fun!"

"... it is a new way to do art..."

"Wow"

"It effected me with my own style. I tried to do what I do in the real world in the virtual. Talk about fail. The virtual art influenced me to see things in a new perspective."

Flow scale adapted from: DOI 10.1007/978-1-4614-2359-1

Flow level for first volunteer:

Physical: 4.4

VR: 5.7

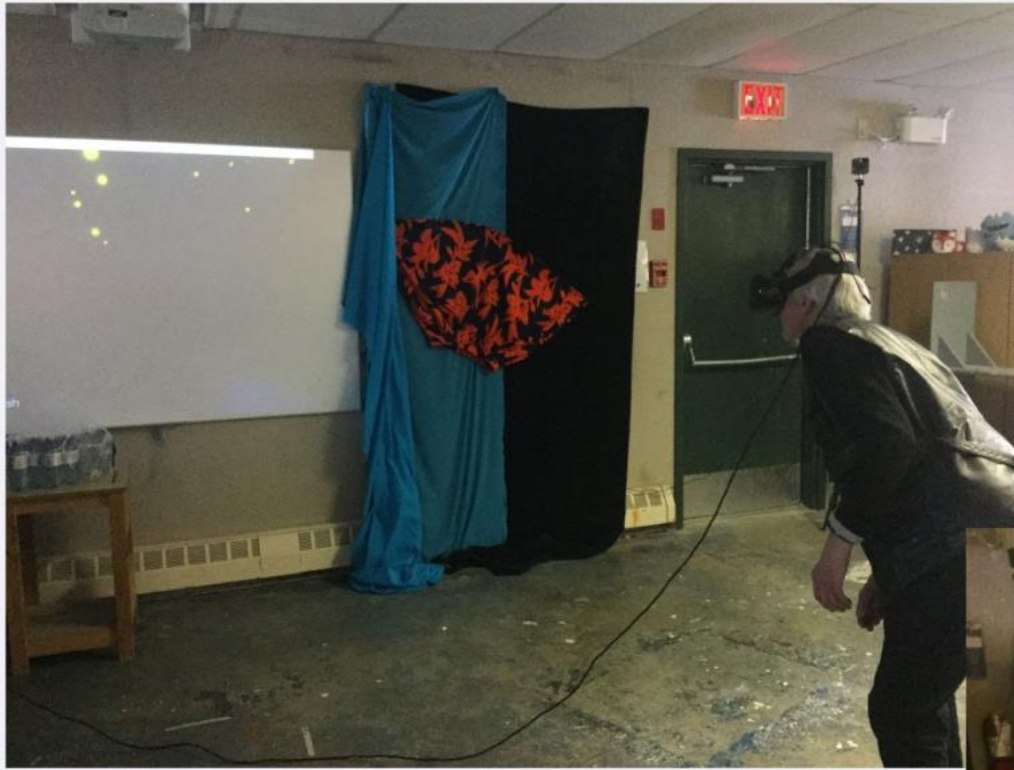
Flow level for second volunteer:

Physical & VR: 6.7(?)

What principles of art that you discussed in this class apply to virtual reality?

"All of them"





I would like to be able to tour archaeological sites, take a virtual walk through the work of famous painters like Hieronymus Bosch. These sound like very interesting ways to enhance visual arts instruction and to complement the work in ARTS 130. The implication, however, is that more access to headsets would be a vital aspect.

I liked what we did in ARTS 130. Even if just a few students decided to work on a more elaborate project, that could be interesting, but there would have to be a way for them to share their project and discuss it with the group. A video walk-through so that everyone could see it.



Adopting Virtuality

#1

Take an adapted TAM Questionnaire

#2

Use various VR programs with educational components

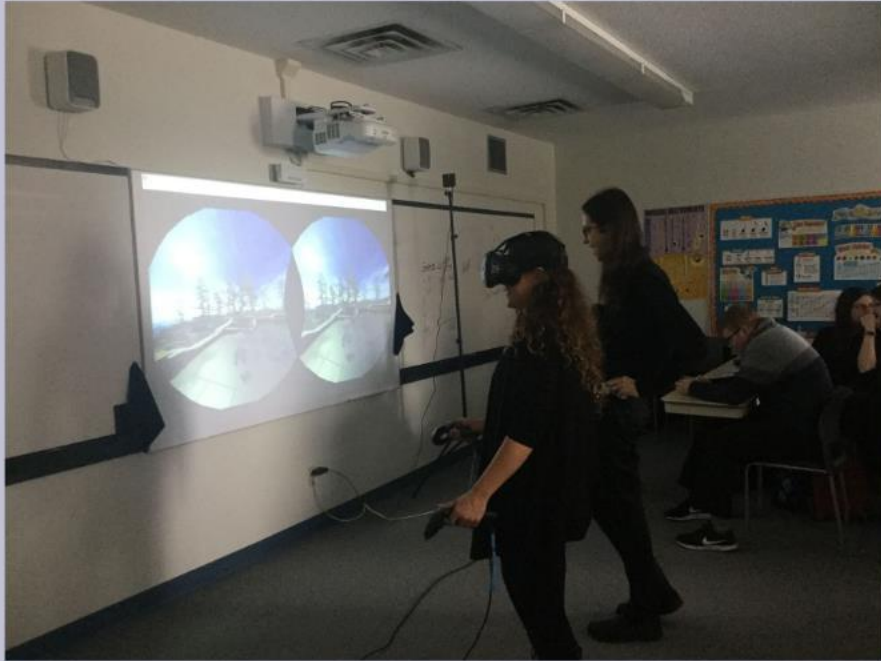
#3

Retake questionnaire

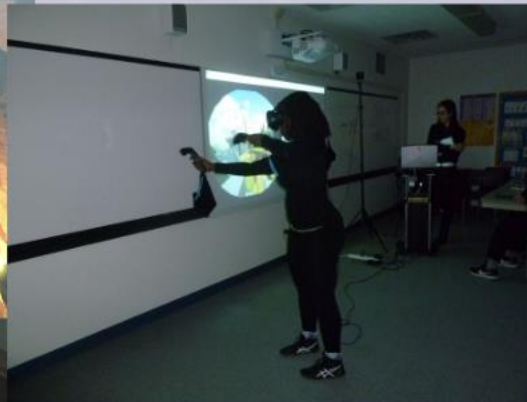
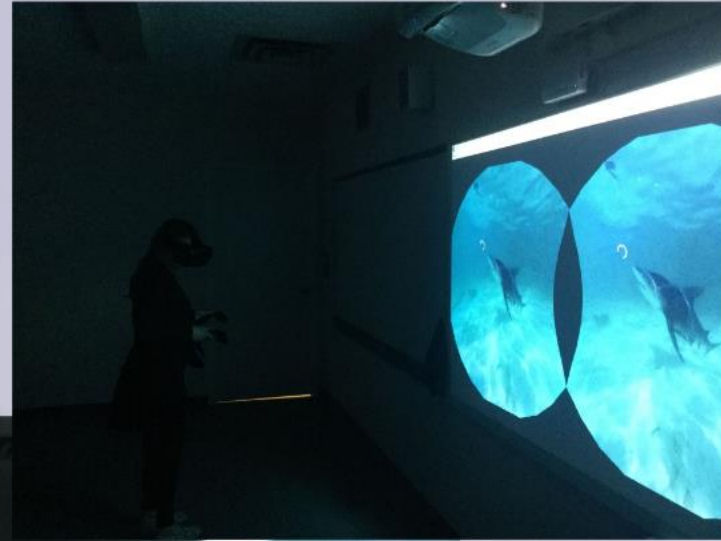
Adapted from Shang
Gao, John Krogstie, and
Keng Siau - DOI
10.3233/MIS-2011-0110



Trying New Realities



Virtual Experiences



TAM Measurements I

* is $p = .05$

** is $p = .01$

Some marginally significant changes between the pre- and post-tests, but there were some very interesting changes of what was correlated with what in the pre- and post-tests. There were some downward trends in a number of the variables, though most were not significant.

Pre-test:

Assuming I have access to the system, I intend to use it if...

I have fun using VR (.533*)

Using VR gives me an advantage (.722 **)

I find VR rewarding (.699**)

I think VR is a good idea (.836**)

Post-test:

Assuming I have access to the system, I intend to use it if...

I have fun using VR (.666*)

Using VR gives me an advantage (.503 **)

I find VR rewarding (.655**)

I think VR is a good idea (.685**)



TAM Measurements II

* is $p = .05$

** is $p = .01$

Correlations in context and perceived usefulness changed quite a lot between pre- and post-tests, with a deeper focus on user friendliness

Pre-test:

I would use VR if I had class sizes close to ACOL standards and I had a good experience using VR (.610**)

I would easily be able to teach students how to use VR if it was relevant to the curriculum (.499*)

Post-test:

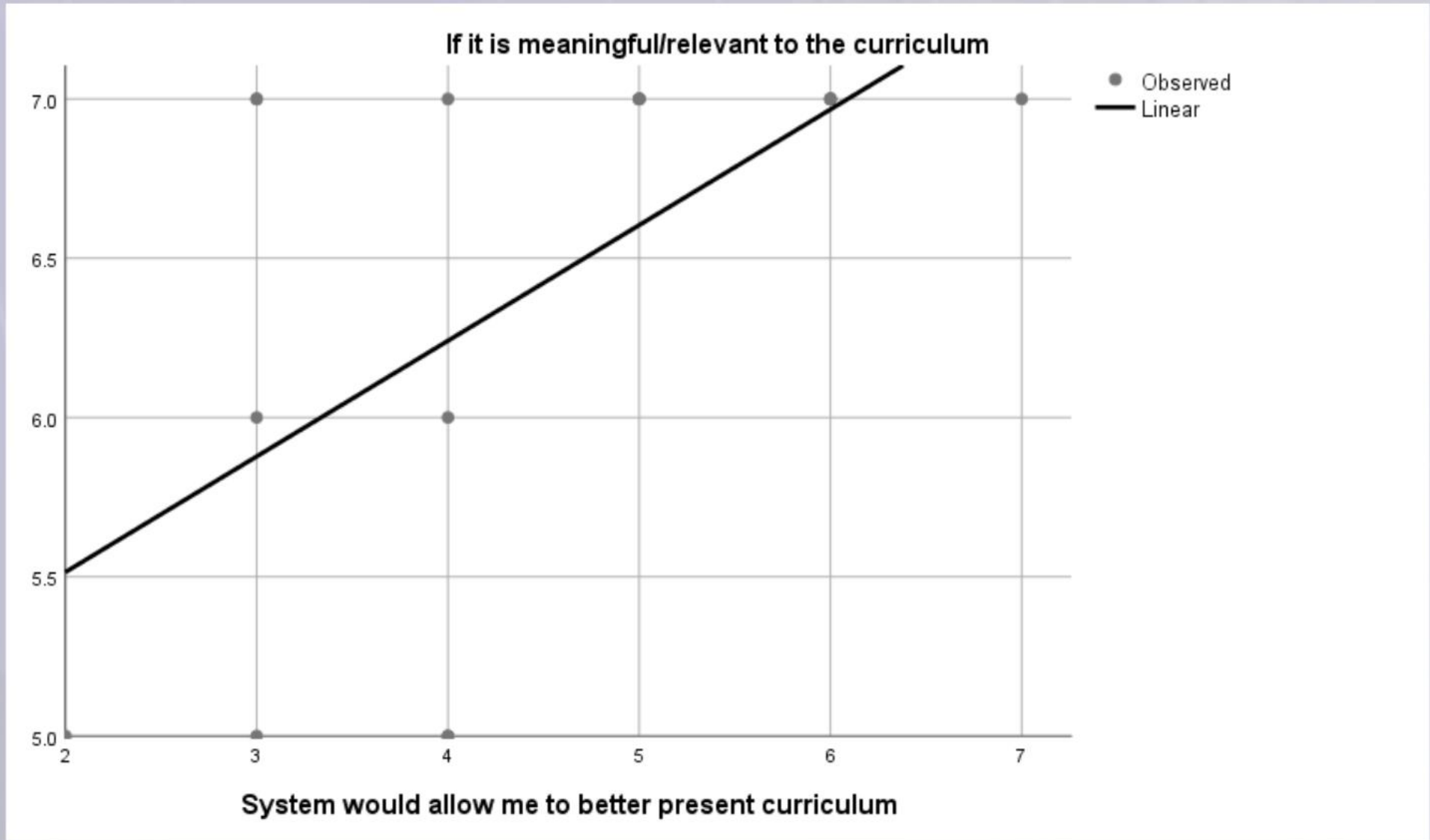
I would use VR if I had class sizes close to ACOL standards and VR was user friendly (.526*, .548*, .723**)

I would use VR if I had a good experience and found it user friendly (.747**, .539*)



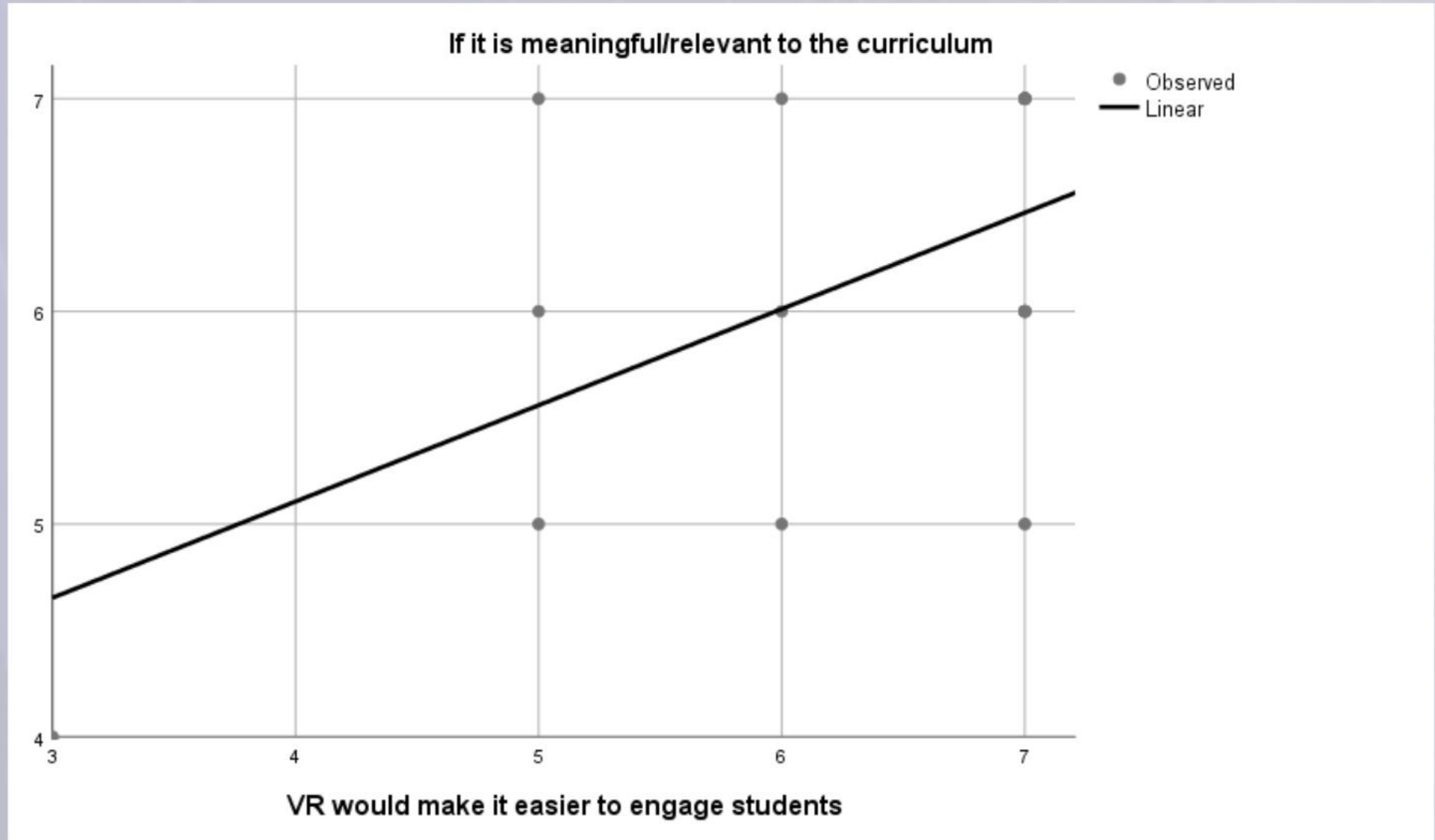
TAM Measurements III

Pre-test
 $p = .012$



TAM Measurements III cont.

Post-test
 $p = .019$



Student Responses - Education

"I really enjoyed it! I look forward to using it in the classroom :)"

"VR would be a great learning tool but if there is only one VR headset that can be used at a time, usually only the person using the headset would be most engaged."

"If the VR is educational I would certainly use it!"

"Wow"

"I think it's worth using VR in class every so often because the experiences that students would have would help them better remember what they learned."

"VR offers a good experience, but for math, it seems the application is very limited for teaching high school students."

"Being that I have actually witnessed in person many of the works experienced in the virtual reality tour, I was extremely impressed with the graphics of the program! Amazing!"



Impressions



Delvin' into Dystopia

Fallout 4

Scenes

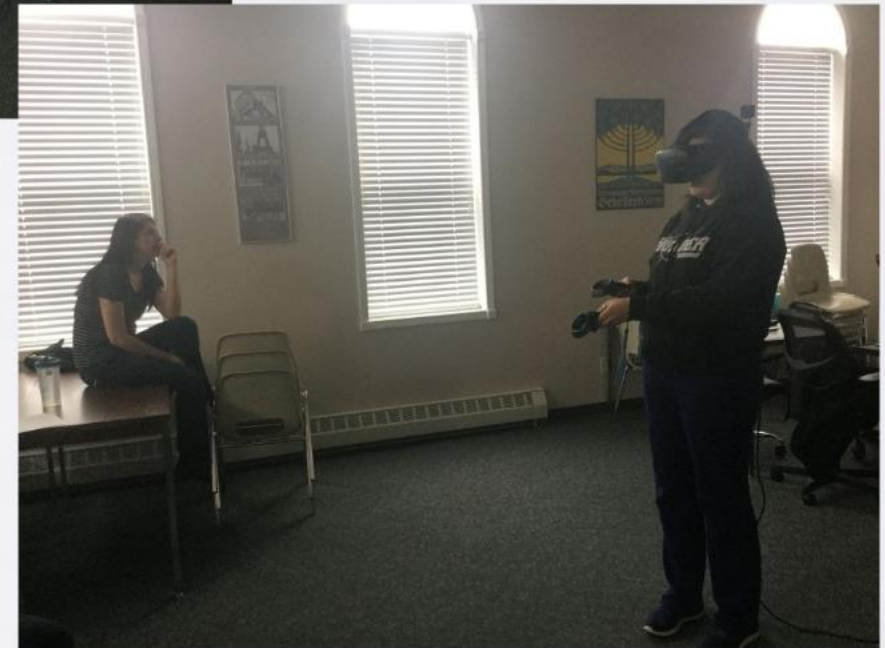
Themes

Reality
Virtually

Results

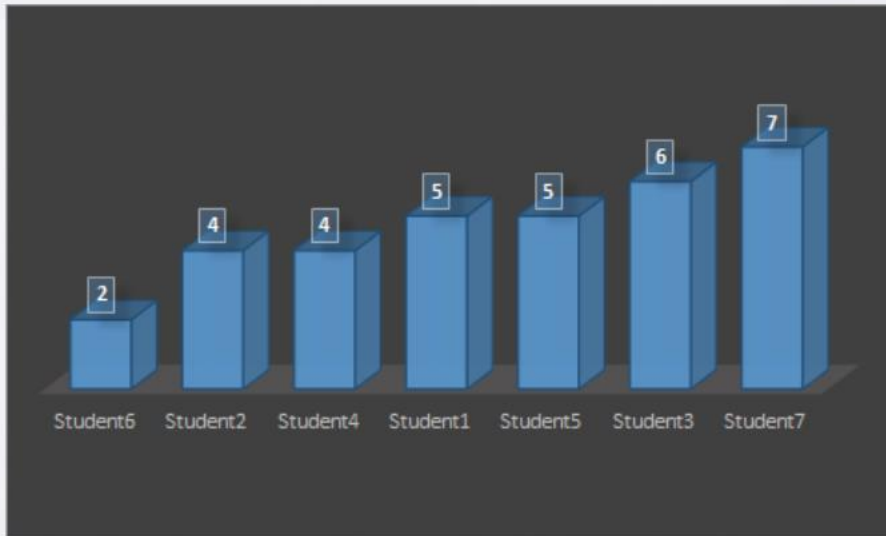
Impressions

Experiencing Scenes



Examining Themes

Survey Item: Narrative/themes I experienced in VR deepened my experience of similar themes in the texts I read.



Real Experiences



RYOT -
Welcome to
Aleppo

[https://
youtu.be/
Nxxb_7wzyJI](https://youtu.be/Nxxb_7wzyJI)

Viewed using:



Imaginative Transport

#1

Transportation Scale

#2

Discussion

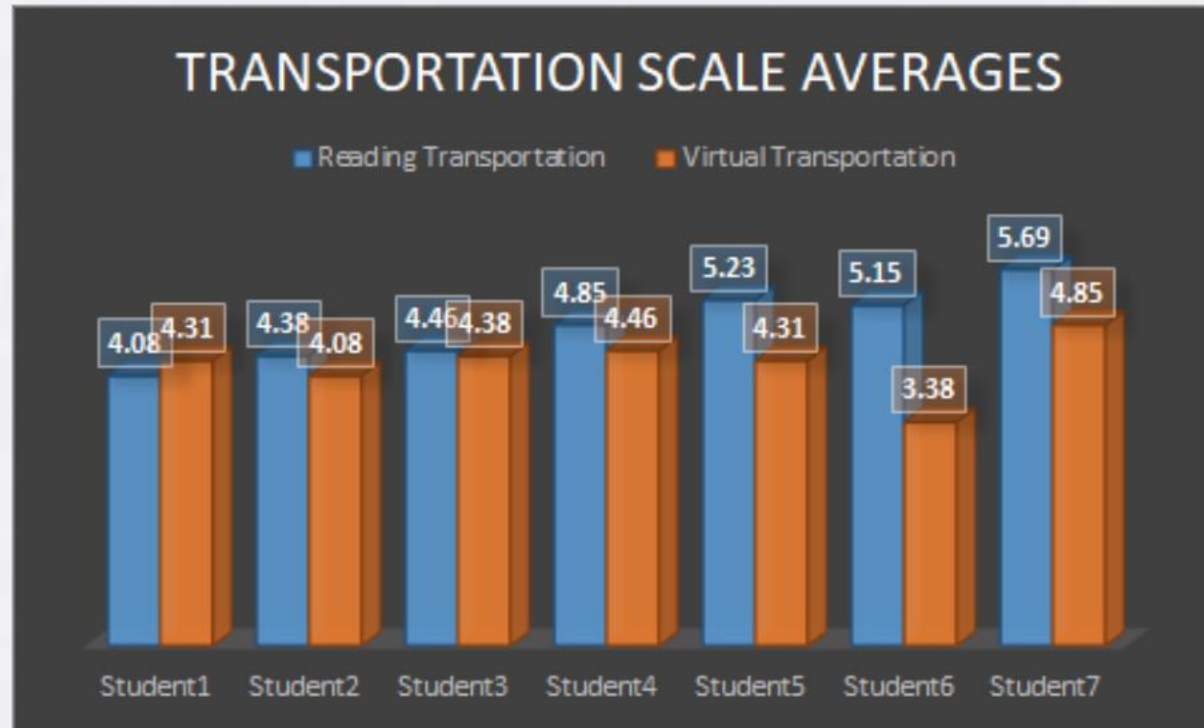
#3

Modified Transportation Scale (for VR)

Transportation Scale adapted
from Green, M.C., & Brock, T. C.
[http://dx.doi.org/10.13072/
midss.683](http://dx.doi.org/10.13072/midss.683)



Transportation Scale Comparison



Paired Samples Test

		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	rtransport - vrtransport	.58242	.66150	.25003	-.02937	1.19421	2.329	6	.059

Transportation Scale Comparison II

Only a few correlations between reading and VR scales.

* is $p = .05$

** is $p = .01$

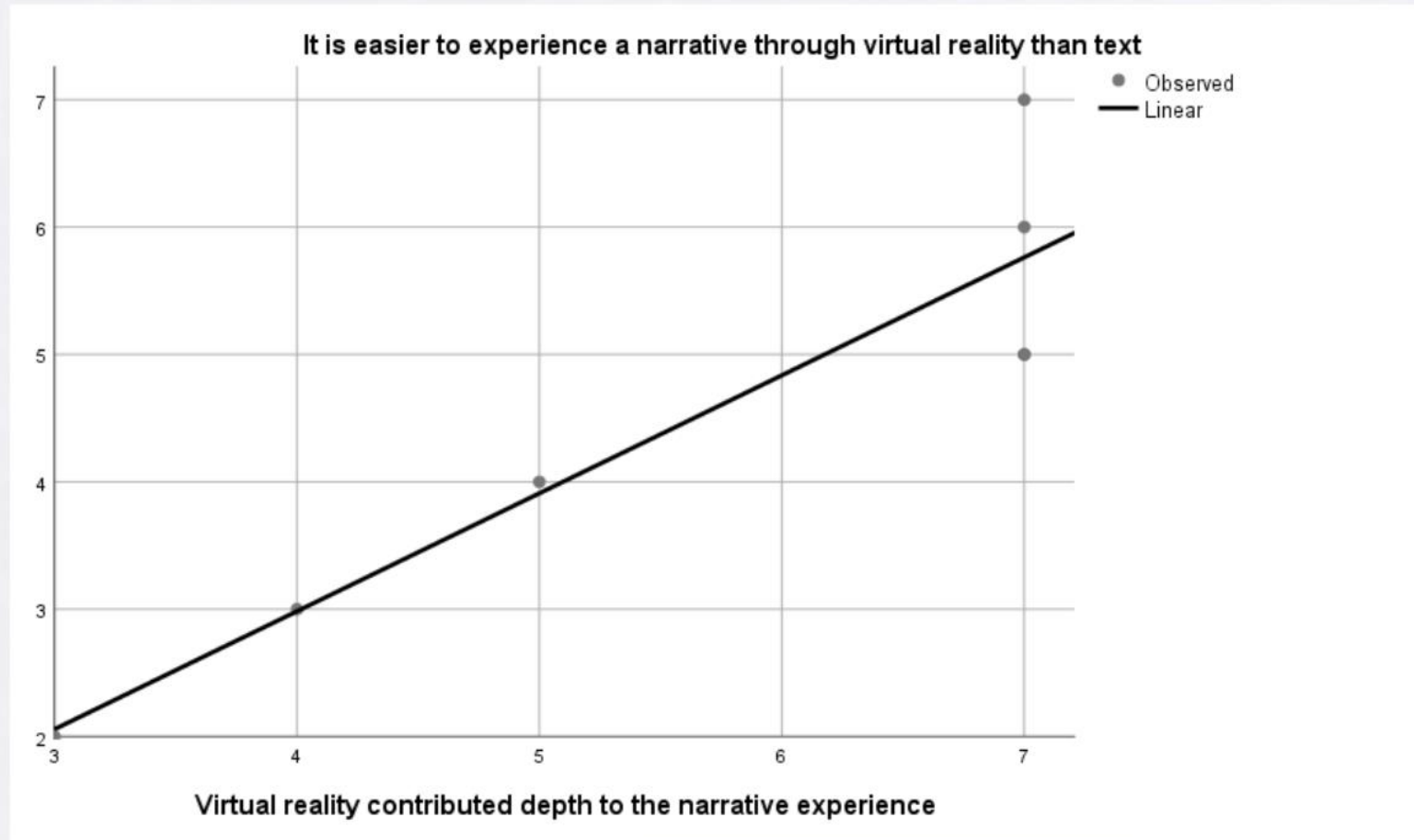
Those whose averages were higher on the transportation scale for reading were also more likely to feel that the virtual world surrounded them (.758*)

Those who were more mentally involved with the VR narrative while experiencing it were more likely to find that reading affected them emotionally (.887**)



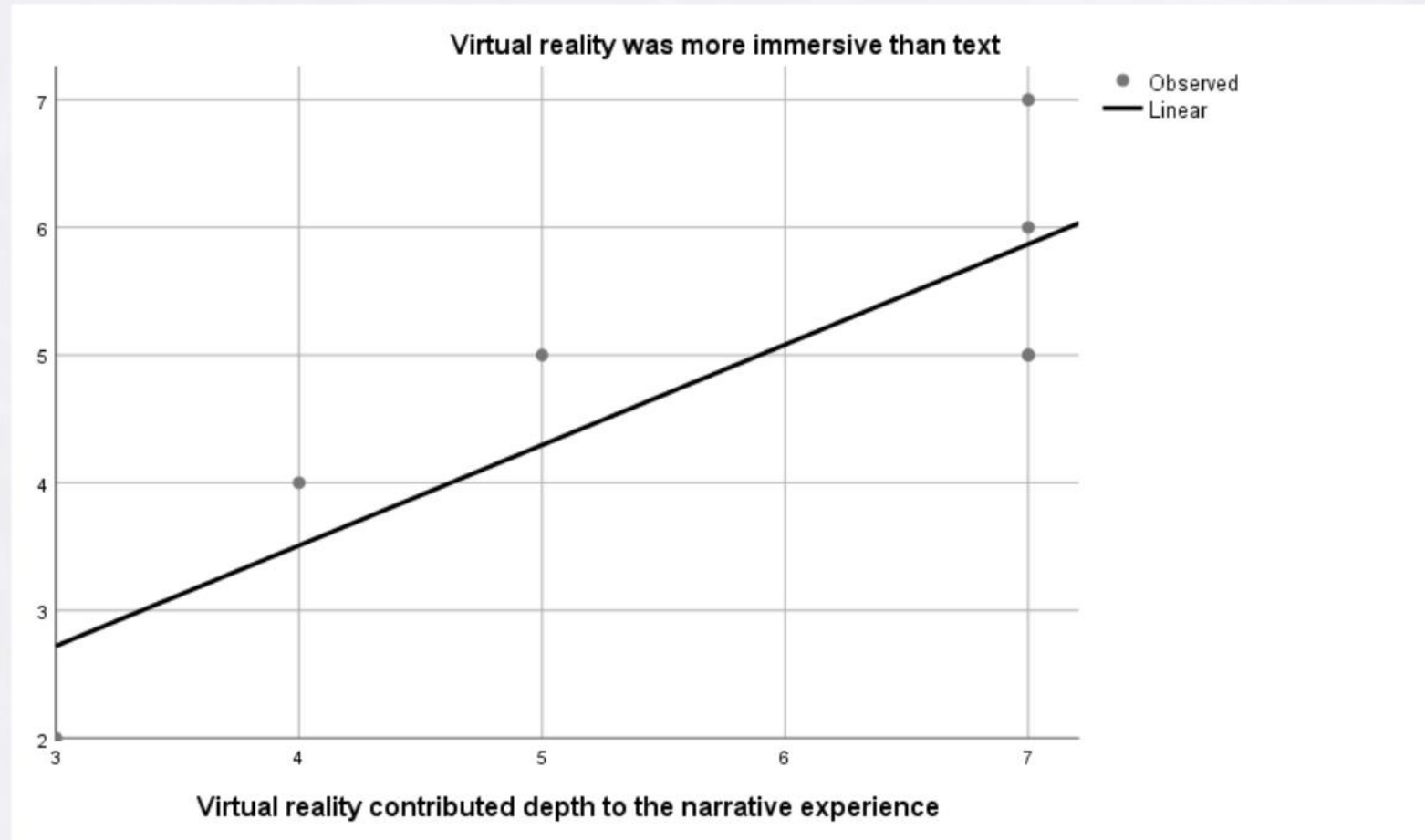
Narrative Experience in VR I

$p = .003$



Narrative Experience in VR II

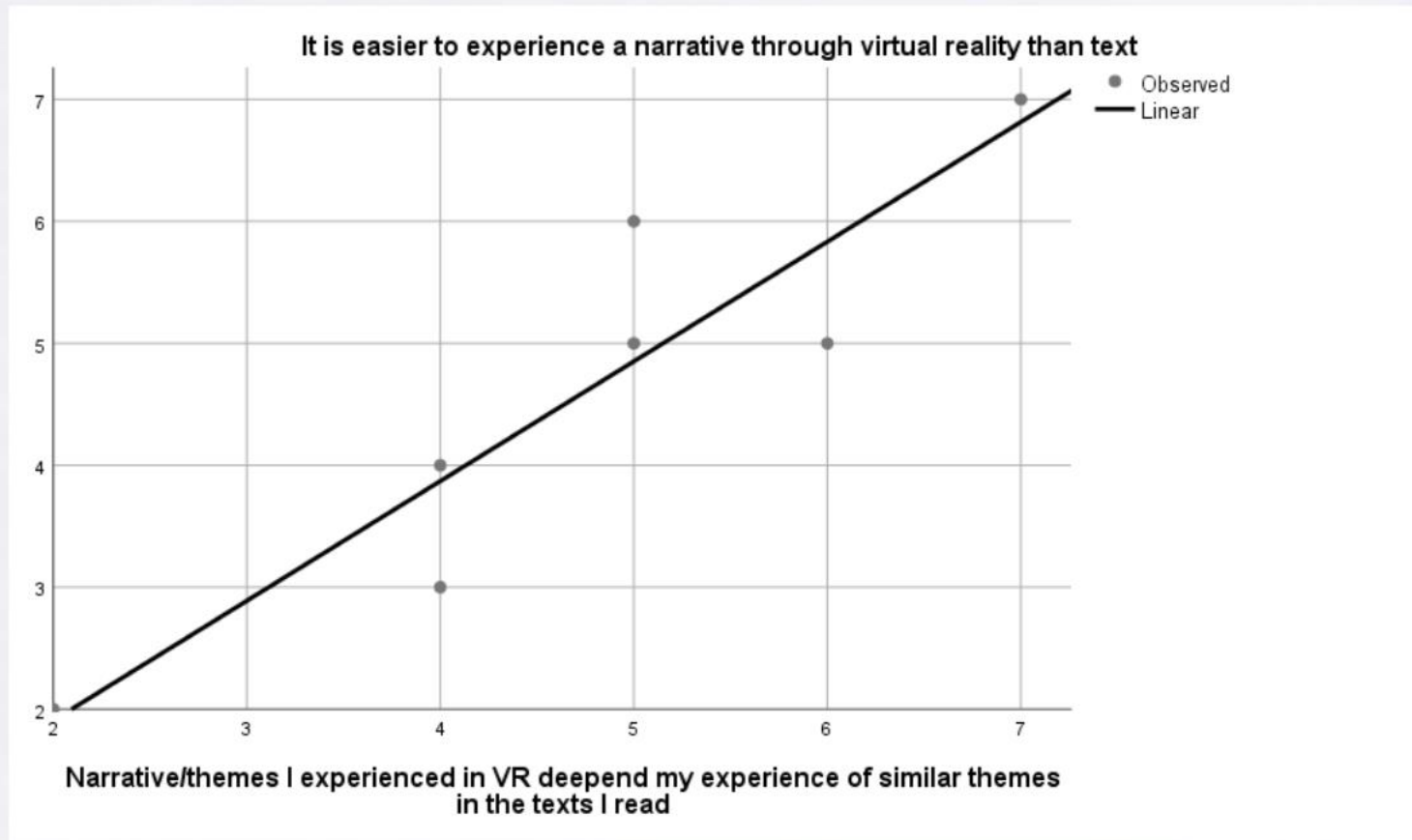
$p = .015$



VR and Reading I

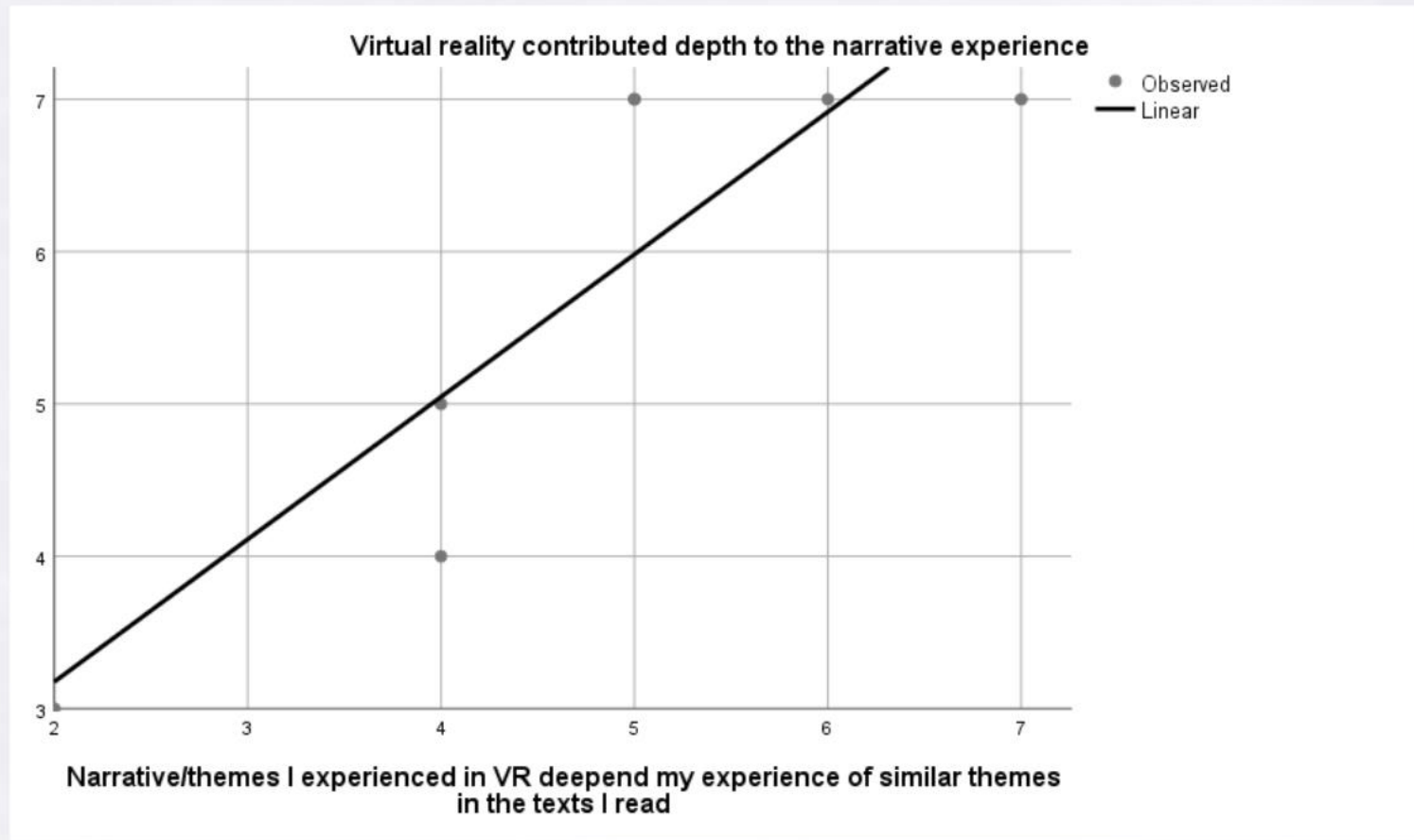
Strong correlations between VR scale and questions about text

$p = .004$



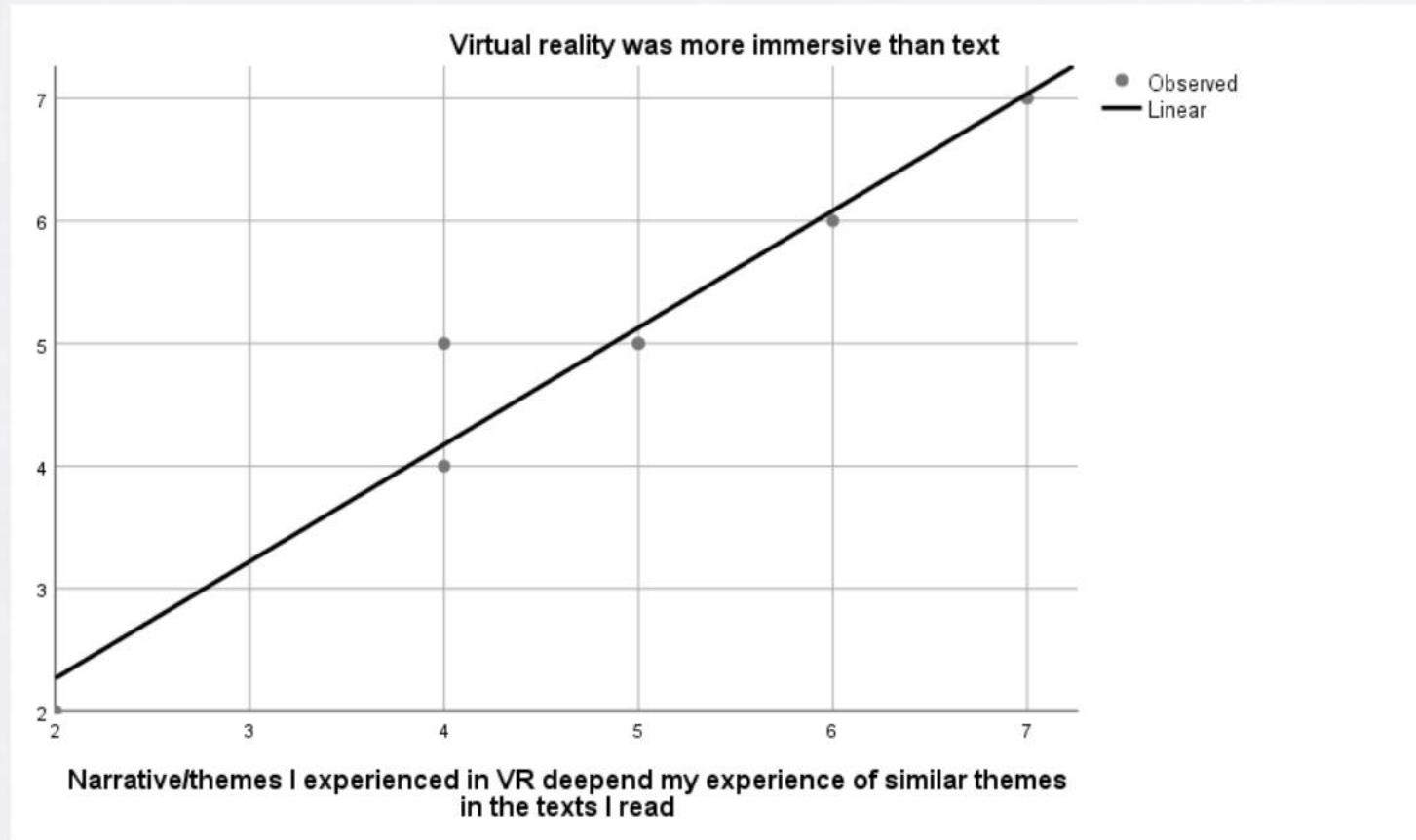
VR and Reading II

$p = .009$



VR and Reading III

$p = <.001$



In-Class Discussion

A book can tell what emotions a character is feeling (nausea, etc.); [Fallout 4] relied on your own emotions

"It's a cool experience more than games we actually play, it was like really in it."

"VR seems like it would capture you more so, and it would be harder to leave the VR world."

"You would feel more connected, you would feel more control. But it may also give you less control."

"Books – imagination gives you as much as you can handle. VR – you aren't in control, so it can help you actually envision the situation in the way it's supposed to be."

"Wow"

"In VR, your emotions will be blurred between the game and reality."

"I appreciate the VR, especially for Syria, because it puts you right there."



Teaching with VR

Students become fully immersed in the story by visually stepping into the world

Students are able to have greater empathy with character struggles

While initially self-conscious of their physical surroundings, they soon become confident and embrace the game mentally

Once students leave the VR world they desire to return to it

Using VR can facilitate group discussion when the instructor wants all students to have the same visual in mind

Beyond the fantasy/storytelling realm, VR can bring the story world into reality



Questions? Comments? Feedback?

