

Usage of 3D Holograms in Education

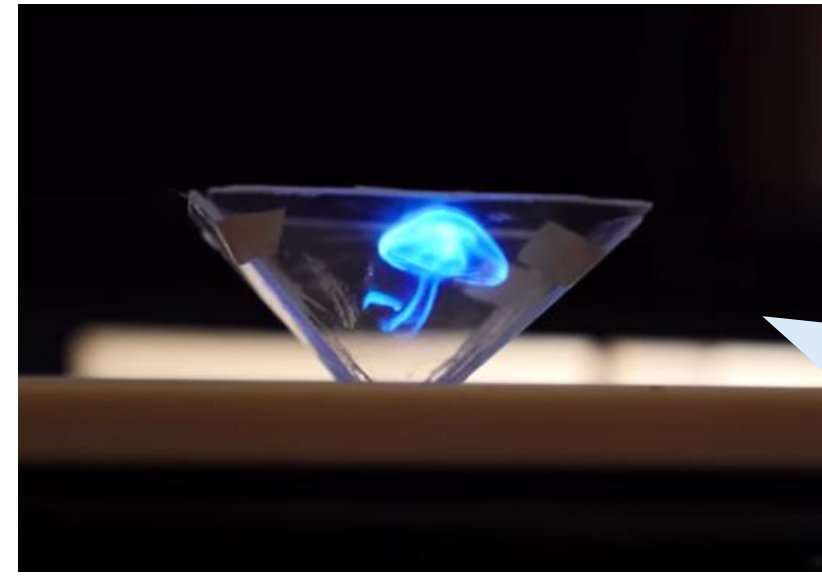
Tokyo Metropolitan Oizumi High School

What 3D hologram is

3D Hologram is the latest technology which can project three dimensional pictures



[1]



[2]

It is necessary to put the apparatus

Q2.What do you want to project in 3D?



[5]

Human anatomical model



[6]

topography



[7]

Astronomical graphics

Q3.Did you find it difficult to understand an eclipse of the sun?

Yes



63%

(20 out of 32 students)

Based on these results, I carried out a pilot experiment designed to enable students to understand the eclipse of the sun better.

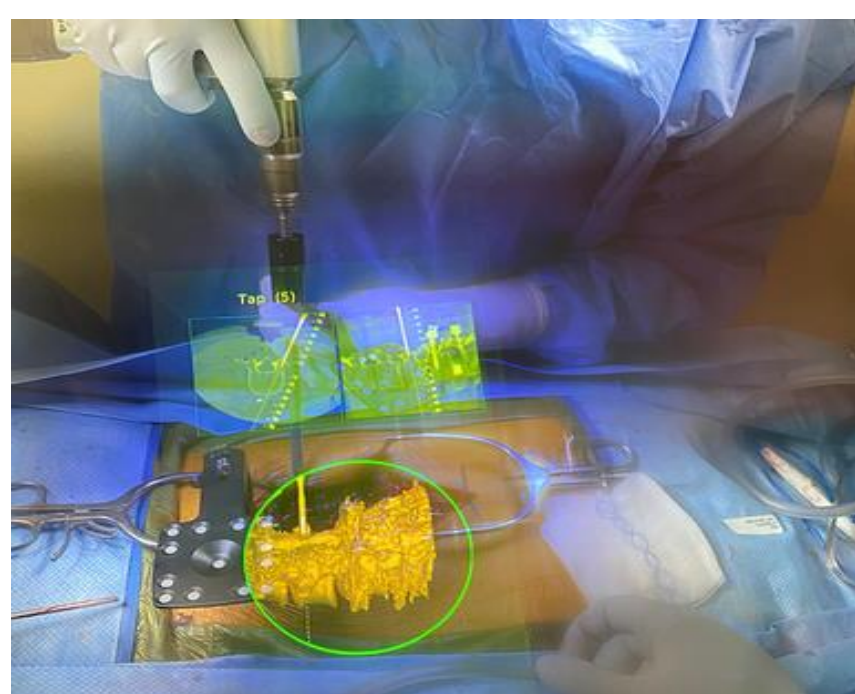
Benefits of 3D Hologram

VR is used in **the medical field**

Simulating operations and counselling with patients.

Necessary to take the goggles

3D Hologram can be seen **in the air without goggles.**



[3]



[4]

Simulating for operations

Back ground of this research

3D pictures are paid no attention

A lot of schools use 2D pictures to teach students

Students sometimes have difficulties in 2D

There are many acrylic panels that will be discarded



3D Hologram is considered to be the best for education

Pilot experiment

The respondents are five first-year senior high school students.

I taught them about the **eclipse of the sun** with a **handout**.

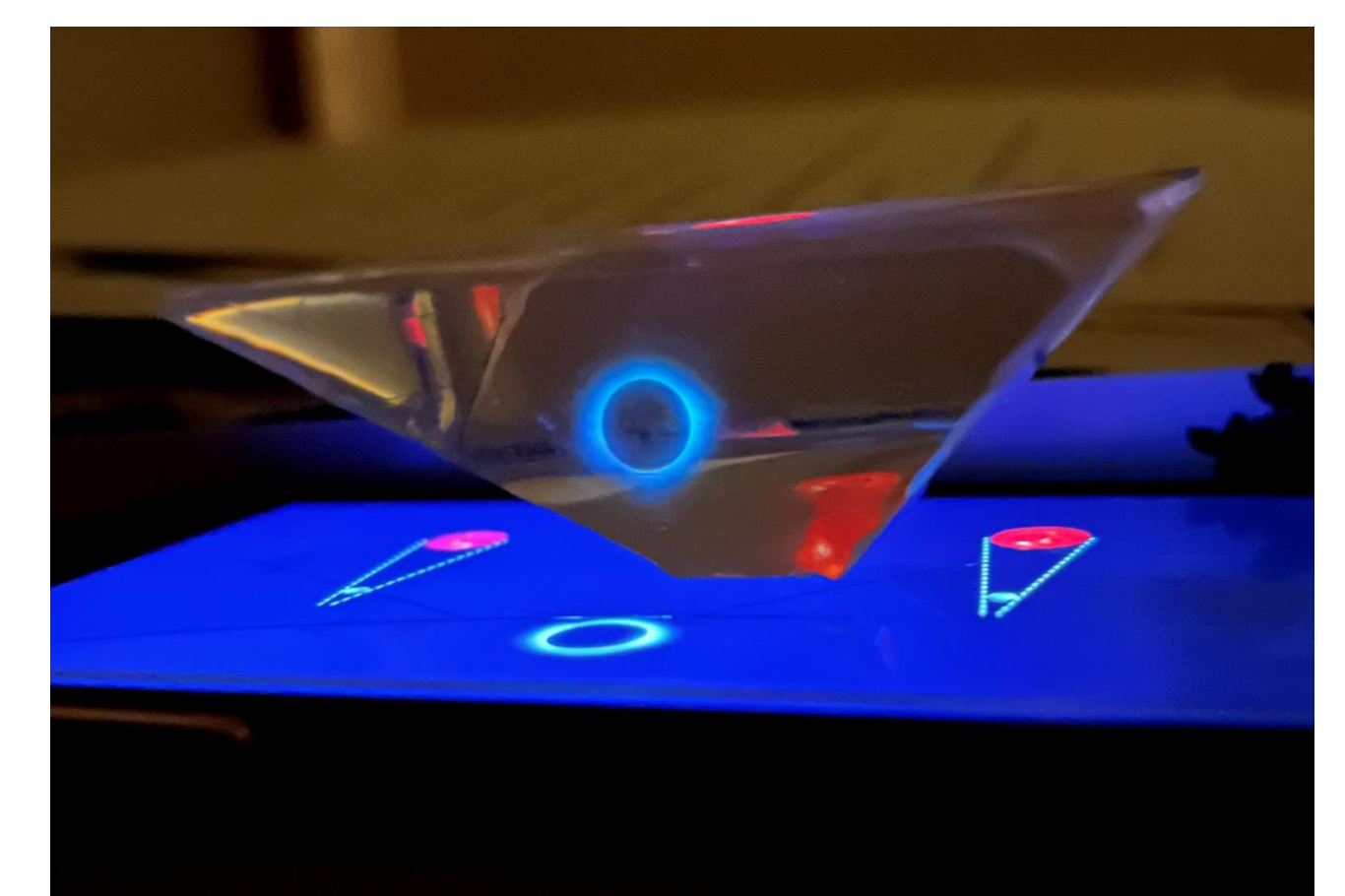
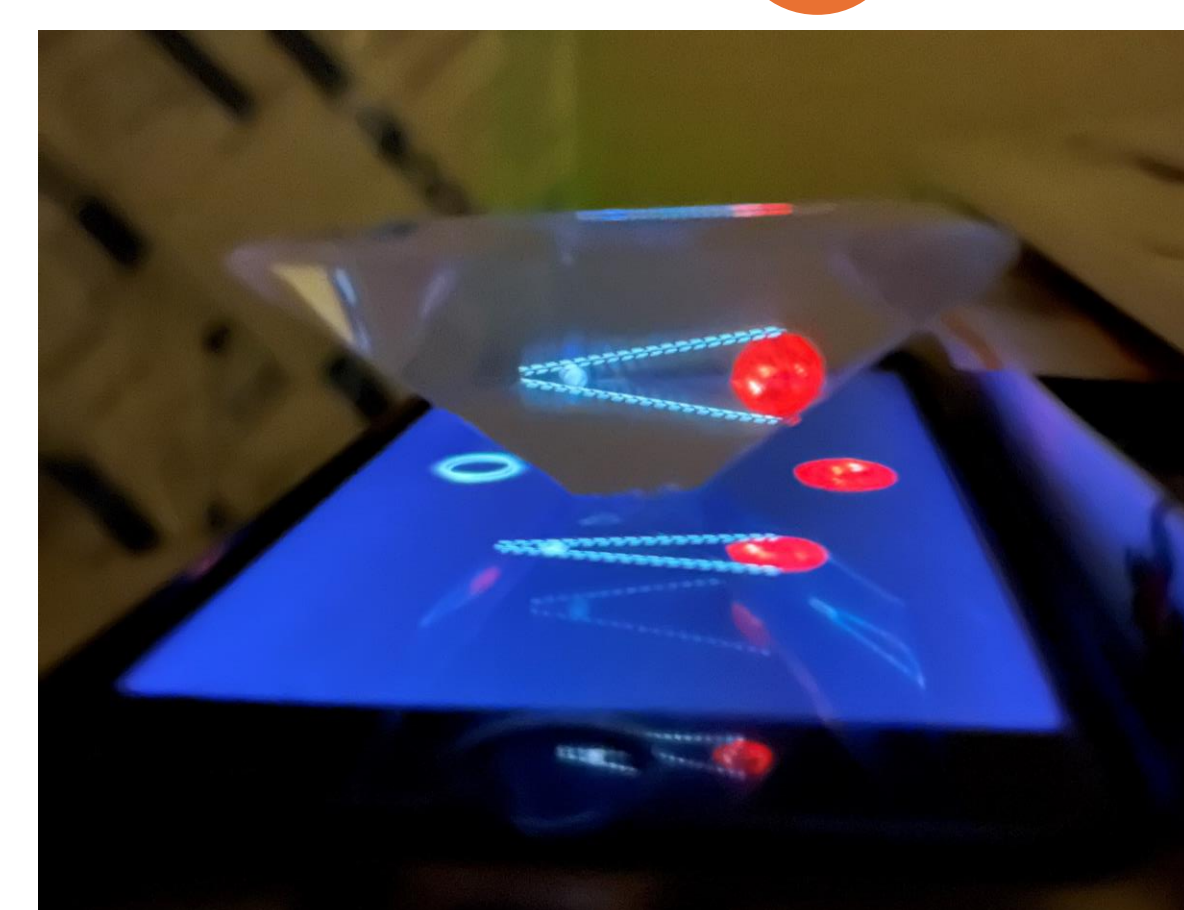
Then, I adopted 3D hologram.

How has your comprehension of the relations between the moon and the sun changed?

How has your comprehension of the distance from the moon to the sun changed?

How has your understanding of the eclipse of the sun changed?

[1]much better [2] better [3]same [4]worse [5]much worse



The [2] was chosen the most.

The goal of this research

Using 3D Hologram **in school**

Students' understanding will be increased

Benefits for students' understanding should be more clearly

To find the new ways to make use of 3D Hologram

The prospects

Why?

Too small apparatus
Too bright room

I will

Make **more bigger** one
Put a box (to prevent the light)

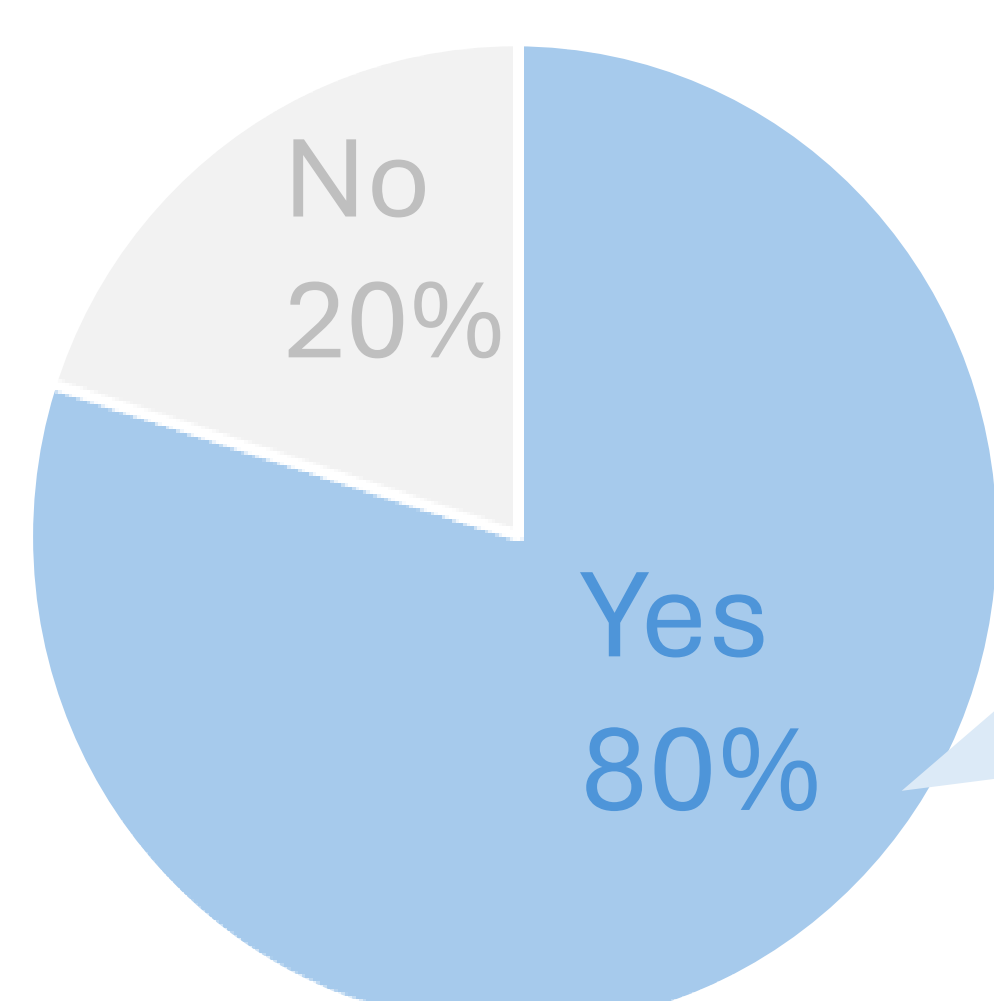
Other improvements

To show the movement of the sun and the moon with **moving pictures**

To make the contents more interesting to satisfy the students' curiosity

Questionnaire

Q1.Are you suffering from inconvenience of using 2D pictures in class?



Science
Mathematics

Citations and References

- [1] 山本竜也 (2015) . 「スマートフォンで3D hologramを体験できる装置を実際につくってみた」 . <https://dreamseed.blog/post-61245/> . 2024年11月15日
- [2] IBNLive.com (2015) . 「This is how you can turn your smartphone into a 3D Hologram projector」 . <https://www.news18.com/news/buzz/this-is-how-you-can-turn-your-smartphone-into-a-3d-hologram-projector-1029681.html> . 2024年11月15日
- [3],[4] JOHNS HOPKINS Medicine (2021) . 「Johns Hopkins Performs Its First Augmented Reality Surgeries in Patients」 . <https://www.hopkinsmedicine.org/news/articles/2021/02/johns-hopkins-performs-its-first-augmented-reality-surgeries-in-patients> . 2024年11月16日
- [5] Pakutaso.com (2016) . 「人体骨格模型 (背中) の無料の写真素材」 . <https://www.pakutaso.com/20160425112post-7696.html> . 2024年11月12日
- [6] Copyright (2024) . 「[動画]簡単な地形断面の作り方! 都市計画やランドスケープに最適!」 . <https://arch-waseda.blogspot.com/2019/05/blog-post.html>
- [7] BusinessToday.In (2020) . 「Solar Eclipse 2020 in June : Date, Time, other details」 . <https://www.businesstoday.in/latest/trends/story/solar-eclipse-2020-in-june-date-time-other-details-261282-2020-06-15> . 2024年12月12日