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Teacher Name: M. Colin Class: 4th class

Project Title: Refraction

YouTube Link: _____

Short Explanation of Project: We did this project to

Learn why objects look opposite

through a transparent liquid like

Water.

Do you have a signed photo release form for each student?

- Yes
- No

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Introduction

Why we chose this project...

What we hope to learn...

What is the problem/objective...

We hope to learn why do objects look opposite
if you look through a glass of transparent liquids
like refraction. We chose this project because one day
we looked through a glass of water and saw the
opposite and we wanted to learn how it works. We hope to
learn about refraction more and how does it happen and
how does it work.

Main Information

What we found out about our chosen topic.

Refraction is seen most often when a wave passes from one transparent medium to another transparent medium.

Different types of medium include air and water.

Refraction is the bending of light... In addition light

comes at the focal point and beyond the focal point. The

image looks reversed because the light that was on the

right is now on the left and vice versa. An example

of how refraction works is placing a straw in a cup

of water with only part of the straw in the water. When

looking at a certain angle, the straw appears to bend

at the water's surface. This is because of the change in

density of the medium and thus bending of light rays

as they move from the air to water. White light is made

up of all colours. Each colour travels

at different speeds through the glass.
this causes each colour to bend by a different amount as it travels from air to glass. The colours continue traveling at different angles when they leave the prism, due to its shape. The resulting colours are called spectrum.
Another example of Refraction is when you look through a glass of water and put a glue stick on the other side it is opposite. Another example is when you sit at the side of a swimming pool and angle your legs in the water your legs look like they are not fully attached to your body.

Experimental Methods

Research Question:

What happens if you look at the sideways arrows through a glass of water? What happens if the arrows face upwards? Does it work through two glasses?

Prediction/Hypothesis:

It will look the same for the sideways one. It will work for the upwards one. It will work through two glasses.

Materials used:

2 Pieces of Paper

A Marker

A glass
Water

Procedure:

- 1 Get a sheet of paper and draw two arrows make them sideways and make them point the same direction.
- 2 Get another sheet of paper and draw two arrows make them face upwards.
- 3 Colour your arrows in.
- 4 Fill your glass with water.
- 5 Look through the glass and put the sheet with the sideways arrows and see what happens.
- 6 Look through the glass with the upward arrows and see what happens.

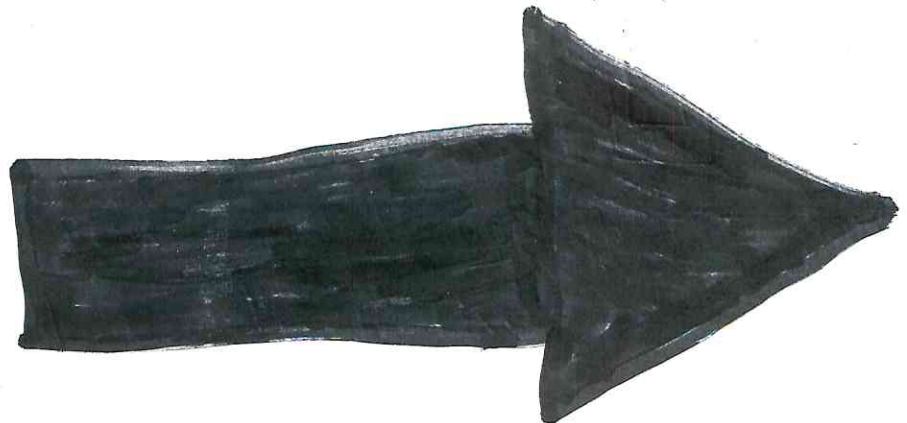
Observations:

We saw that the sideways arrows went the other way but the upwards arrows didn't change. The sideways arrows worked through two glasses but the upward one didn't work.

Conclusion:

We figured out that the sideways arrows looked opposite through water but the upward arrows didn't work and we got the same results for the double glass as just one glass. We thought this experiment was really cool and easy and you guys should try it.

Diagram(s):



Experimental Methods

Research Question:

What happens when you look at a colored sheet
through a glass of water?

Prediction/Hypothesis:

It will change the direction of the colours.

Materials used:

A piece of paper

A glass of water

Different coloured markers

Ruler

Pencil

Procedure:

1 Get a Piece of Paper.

2 Get a ruler and make the lines diagonal and after each line use your ruler and put an inch gap.

3 Colour in the lines in different colours example green, red, yellow and blue

4 Get your glass of water and put the piece of coloured paper behind the glass and see what happens.

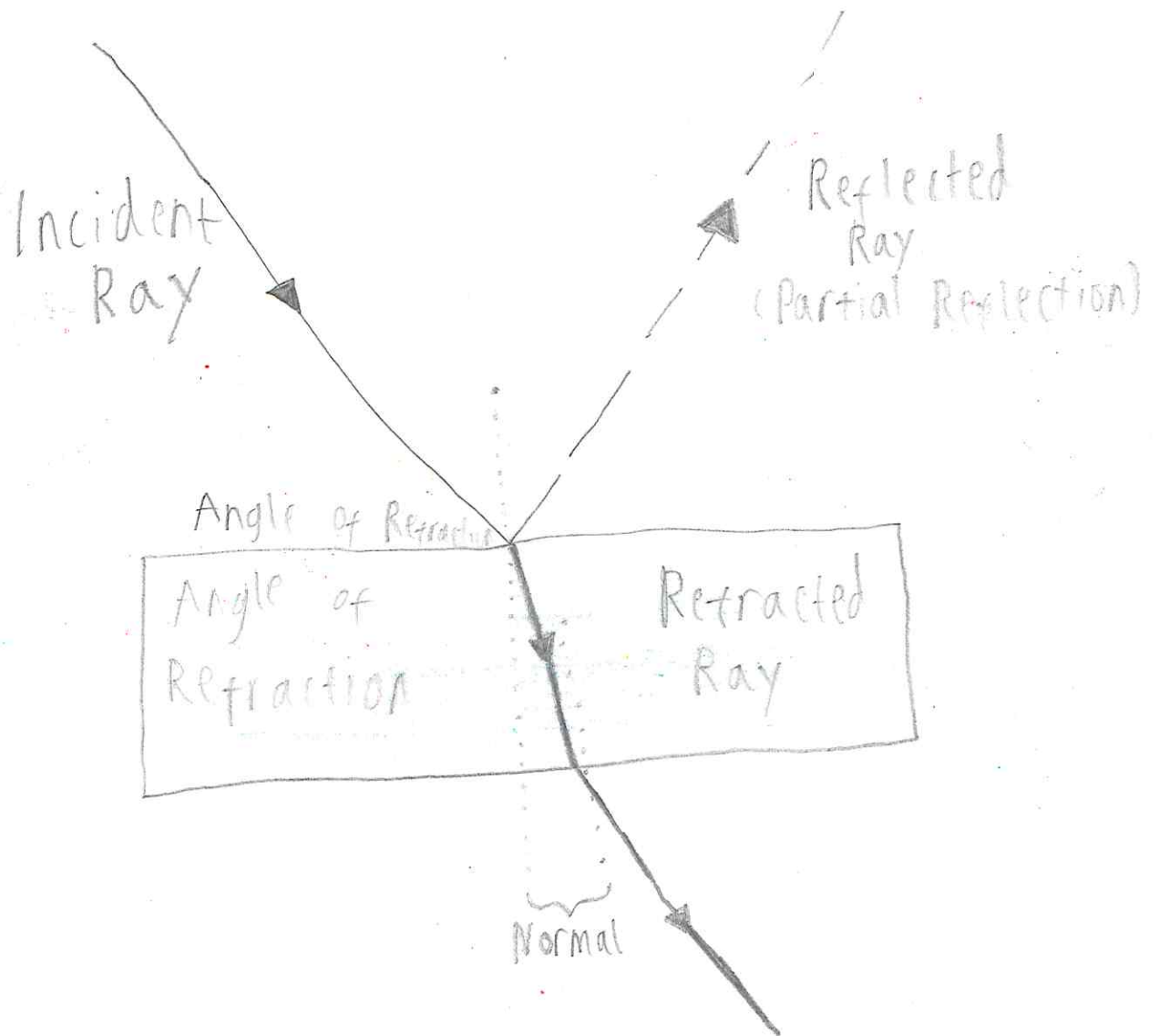
Observations:

We saw that it made an opposite flowy pattern when it was put behind the glass.

Conclusion:

We figured out that it made a odd Flowy
Pattern and that it was very similar to the arrow
Experiment.

Diagram(s):



Conclusions

What we learned.

The key discoveries that we made.

What we enjoyed most while doing the project.

What we found most challenging.

What we would do differently if we were to begin again.

We learned that if you look at an object from a certain angle through a transparent liquid like water you will see the opposite.

The key discovery that we made is when you look at an arrow through a transparent liquid you don't see the opposite.

We found finding information for the main body the challengingest.

If we would start again we would choose:

a new topic like the Solar System or
The Biological body because it might be
more interesting and easier. It would be funner
to make paper planets and fake body parts
like the heart and Lungs.

Acknowledgements

Support we received with our project...

Illustrator: Evelina.K / Saorla Farrel.

Researcher: Evan Abraham

Researcher: Larian.K

Supporter: Jinu Abraham

Supporter: M. Colin

References

Books, websites, articles or other references that helped us with our project.

• Safari Science Library Kids

• Science Encyclopedia

• Kids Kiddle.co

• Midlandscience.ie

• WWW.sciencefun.org

• Small World Geography and Science 6th class.