

“HOLOGRAM” DIGITAL IMAGE DESIGN COMPETITION 2022/23

Science Education Section, EDB

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THE OPTICAL KNOWLEDGE OF “HOLOGRAM” (全息圖)

Hologram technology involves *interference of light* (光的干涉)

THE OPTICAL KNOWLEDGE OF “HOLOGRAM”

Does this project required interference of light?

Then what scientific principle is involved?



LINK TO SCIENCE (S1-3) CURRICULUM AT JUNIOR SECONDARY LEVEL

Unit 11 (Force and Motion) 力和運動

- Force – Balanced forces and unbalanced forces 力 - 平衡力和不平衡力

Unit 14 (Light, Colour and Beyond) 光、顏色和光譜以外

- Light rays from an object 來自物體的光線
- Reflection 反射
- Refraction 折射

LINK TO PHYSICS (S4-6) CURRICULUM AT SENIOR SECONDARY LEVEL

II. Force and Motion 力和運動

- Newton's Law of motion 牛頓運動定律
- *Moment of a force* 力矩

III. Wave Motion 波動

- Reflection of light 光的反射
- Refraction of light 光的折射

LAW OF REFLECTION: PLANE REFLECTION (平面反射)

- Law of reflection (反射定律) $\angle i = \angle r$
- Properties of image (e.g. laterally invert 橫向倒置...)

REFRACTION OF LIGHT

- Light ray bends travel from one medium to another

REFLECTION OF REFRACTED LIGHT

- Reflected light ray after refraction
- More than one light ray is observed

How to make the image more clear?

INCLINATION AND DIGITAL IMAGE

- Visualising the formation of image
- Calculating inclination with the aid of ray diagram (光線圖)
- Design the “Hologram” and digital image

CENTRE OF GRAVITY (重心)

- Shape and size affect the centre of gravity of the display unit
- How to prevent toppling of the unit?

Thank you!